

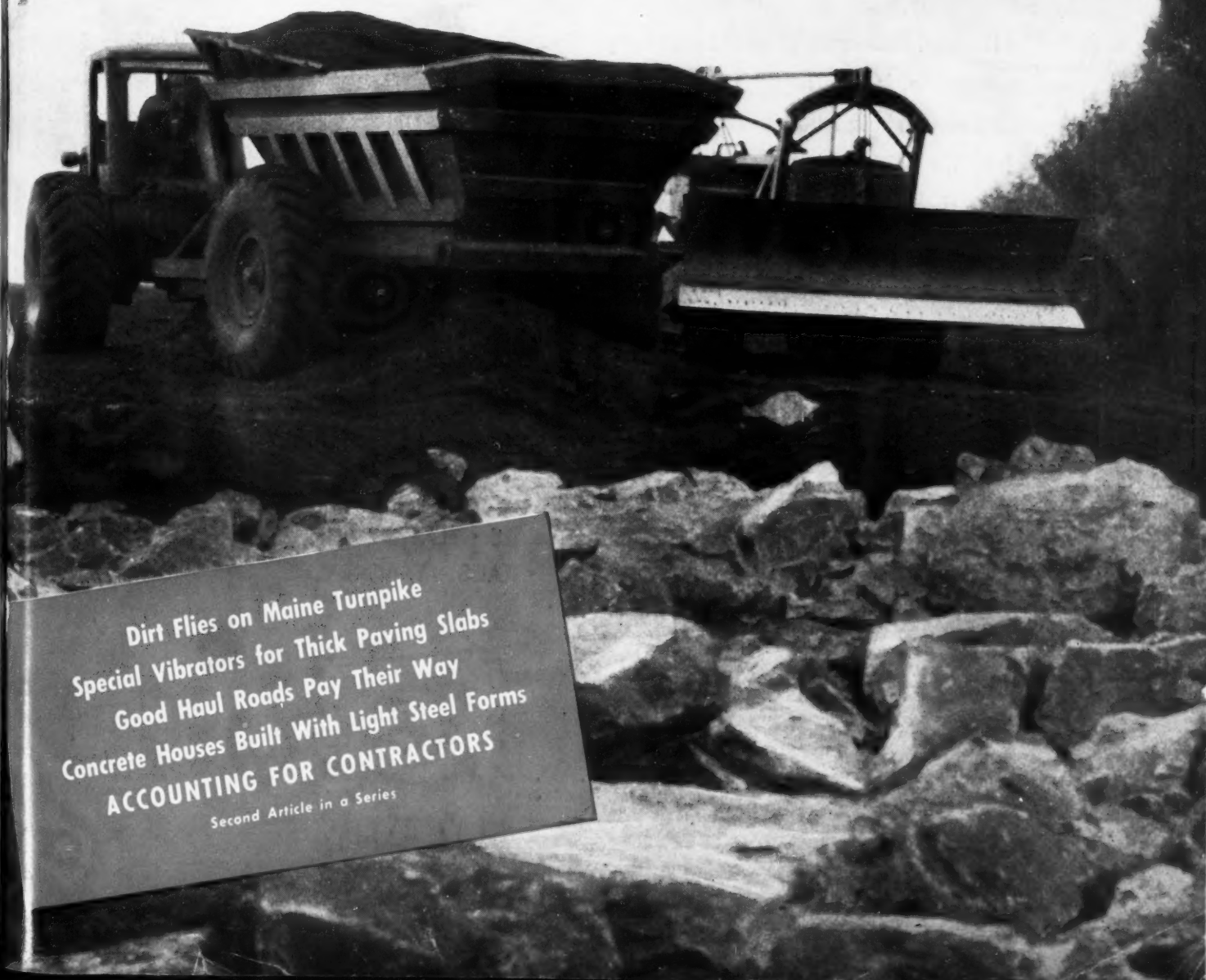
TECHNOLOGY DEPT.

Construction Methods

OCTOBER 1946

PUBLIC LIBRARY
OCT 18 1946
DETROIT

Rock fill on Maine Turnpike is carefully covered with earth to make stable embankment



Dirt Flies on Maine Turnpike
Special Vibrators for Thick Paving Slabs
Good Haul Roads Pay Their Way
Concrete Houses Built With Light Steel Forms
ACCOUNTING FOR CONTRACTORS
Second Article in a Series

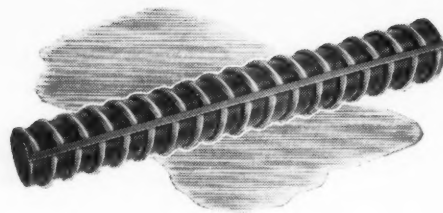
will
ing-
con-
put
able
on
le:

ers**
lac-
kers,
neu-
quip-
er &
ated

NT
iven
a 60
unt-
Drills
ge of
tors'
unced

TON

Machinery
Ransome
Division



Construction Industry Gains by Inland Action

*New Licensing Program Increases Availability
of HI-BOND* Reinforcing Bars*

Inland Steel Company, realizing the tremendous demand for its Hi-Bond Reinforcing Bar for necessary post war construction, is granting licenses to other steel manufacturers to make this greatly improved reinforcing bar. We believe this announcement will be good news to thousands of architects, engineers, and contractors.

With manufacturing licenses being granted to other plants, greater tonnage of this superior reinforcing bar will be made available for increased construction from coast to coast. The construction industry will now have more Hi-Bond for use in buildings, bridges, dams, highways, and other reinforced concrete structures.

Write for a copy of the bulletin on Inland Hi-Bond Bars.

SCRAP NEEDED NOW!

More scrap is required to make the steel so greatly needed by American industry. Please move your scrap back to the mills.

INLAND STEEL COMPANY

38 SOUTH DEARBORN STREET, CHICAGO 3, ILLINOIS

Sales Offices: Detroit, Indianapolis, Kansas City, Milwaukee,
New York, St. Louis, St. Paul

**OTHER PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP
TIN PLATE • PILING • FLOOR PLATE • RAILS • TRACK ACCESSORIES**

* REG. U.S. PAT. OFFICE

INLAND HI-BOND

CONCRETE REINFORCING BARS

Cuts and Fills

HEIGHT of utter confusion department reports this beaut of a story from Jerseyville, Ill. Seems that a chap out there was cutting down trees on his own woodlot and sawing them into lumber to build a new home for himself. When the house was two-thirds complete CPA stepped in and ordered all work stopped, because, it appears, the trees were oak, and oak shall be used only, says CPA, for flooring. A man's house is his castle these days only if he doesn't try to build it himself out of his own trees.

TREES that are suitable for lumbering operations are being made readily accessible by a 2,000-mile forest-access road program that is rolling along in fine shape. The new roads are expected to increase lumber production by 172 million ft. this year, by a billion ft. next year.

BUILDING ROADS to give trees a ride is, of course, a fine thing for the housing program, but how long can we go on without building roads to give people and freight a ride? If the long-suffering and lethargic public ever really gets riled up over traveling our inadequate, congested, outworn, obsolete, rough and dangerous highways that take a terrific toll in human life, in mangled flesh, in time and temper, we'll see a hysterical demand for good roads build-up that will make the present housing push sound like a maiden's prayer in comparison. Arizona and many of the other 47 states admit their highways aren't fit to travel. Yet the highway program lags partly because of political timidity and official shying away from realistic current costs. Even if present highway costs were doubled, modern safe highways would still be a most profitable public investment.

A CHICAGO electric company, to reduce Friday afternoon absenteeism, pays time-and-a-half for the last 5 hr. of a 40-hr. week. The plan may keep workers on the job, at least until the novelty wears off, but we'll bet it will soon become another union demand for inclusion in all labor contracts.

QUITE A SHOCK comes with word that Savannah River Electric Co. has asked FPC for permission to build a \$45,000,000 hydro project on the Savannah River. We've become so used to public agencies taking over all power construction that the news leaves us groggy. What a sweet job that would be for some lucky contractor—a \$45,000,000 private hydro development. Don't hold your breath waiting for it, boys, for official Washington hasn't shown much love for private utilities for at least 15 years.

Construction Methods



OCTOBER, 1946



HERE'S HOW IN THIS ISSUE

LAND PLANER smoothes rough ground after clearing	—p. 73
MAINE TURNPIKE is graded on rush schedule	—p. 78
STEEL TRIPOD braces composite mooring dolphin	—p. 82
RUGGED TRACK tests contractors' trucks	—p. 83
VIBRATING EQUIPMENT places 18-in. runway slab	—p. 84
VIBRATORY PAVING TUBE handles harsh concrete	—p. 85
MOVABLE STEEL FORMS build hollow-wall houses	—p. 88
TRACTOR-MOUNTED SAW speeds land clearing	—p. 91
GOOD HAUL ROADS cut contractors' costs	—p. 92
PRELIMINARY WORK starts at Davis Dam	—p. 98
PROFILOGRAPH records roughness of pavement	—p. 100
CAGE protects tractor operator from underbrush	—p. 101
RADIANT HEATING is installed in railroad station	—p. 102
ASPHALT is injected under concrete highway slabs	—p. 103
DRAGLINES flatten steep railroad sideslopes	—p. 104
RIBBED REINFORCING BAR cuts tying costs	—p. 107

ACCOUNTING FOR CONTRACTORS

SECOND OF A SERIES OF ARTICLES
ON GOOD BUSINESS PRACTICE—p. 94

JAMES H. McGRAW, Founder and Honorary Chairman

Editorial and Publishing Offices: 330 West 42nd St., New York (18); 520 North Michigan Ave., Chicago (1); 68 Post St., San Francisco (4); 738-9 Oliver Bldg., Pittsburgh; Aldwych House, London, W. C. 2, England. Branch Offices: Washington; Philadelphia; Cleveland; Detroit; St. Louis; Boston; Los Angeles; Atlanta, Ga.

JAMES H. McGRAW, JR.
President

EUGENE DUFFIELD
Editorial Assistant
to the President

CURTIS W. McGRAW
Senior Vice-President
and Treasurer

NELSON BOND
Director of Advertising

JOSEPH A. GERARDI
Secretary

J. E. BLACKBURN, JR.
Vice-President
Director of Circulation

CHANGE OF ADDRESS

Director of Circulation,
Construction Methods,
330 West 42nd Street,
New York 18, N. Y.

Please change the address of my Construction Method subscription.

Name

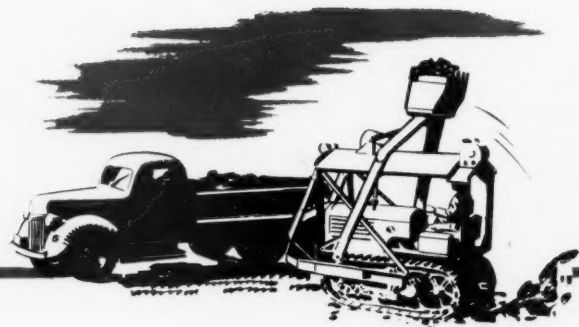
Old Address

New Address

New Company Connection

New Title or Position

CONSTRUCTION METHODS, October, 1946, Volume 28, Number 10. Published Monthly, price 25c a copy. Return Postage Guaranteed. Allow at least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, 330 West 42nd Street, New York (18), N. Y. Subscription rates—United States and possessions, \$2.00 a year, \$3.00 for two years, \$4.00 for three years. Canada, \$3.00 a year, \$5.00 for two years, \$6.00 for three years. Pan American countries \$6.00 for one year, \$10.00 for two years, \$12.00 for three years. All other countries, \$15.00 a year, \$30.00 for three years. Please indicate position and company connection on all subscription orders. Entered (or reentered) as second class matter December 16, 1936, at the Post Office of New York, N. Y., U. S. A., under the act of March 3rd, 1879. Printed at U. S. A. Cable address: "McGrawhill, New York." Member of A. B. C. Member of A. B. C. Contents copyrighted 1946 by McGraw-Hill Publishing Co., Inc., 330 West 42nd Street, New York (18), N. Y.—All rights reserved.



Perfect setting for a "Boring" story!

To assure smooth, efficient operation, all holes in the transmission cases of Oliver "Cletrac" crawler tractors are bored to exceptionally close tolerances from one setting. In this way, we can guarantee the exact alignment of all transmission gears and shafts, assuring economical operation and freedom from excessive maintenance.

This efficient operation not only

improves performance, but is another of the cost-cutting steps which make it possible for us to add *extra* quality without additional cost to you. *Extra* quality is the standard that characterizes every Oliver "Cletrac" tractor part.

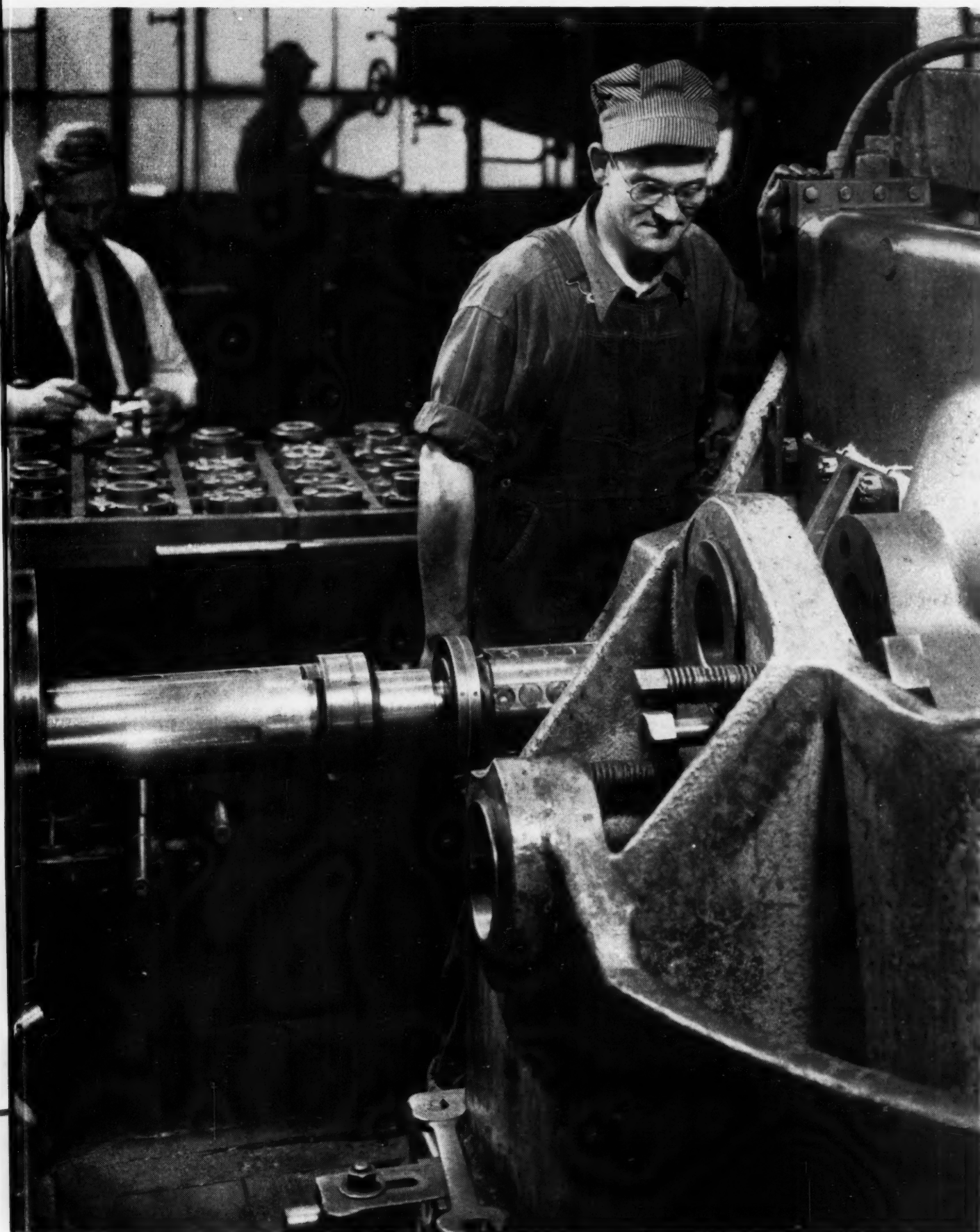
Maintenance of that standard enables your Oliver "Cletrac" dealer to offer you the finest in crawler tractors for your every need.

CLETRAC

a product of

The OLIVER Corporation





Boring transmission case to close tolerances. All holes bored from one setting to insure concentricities and accurate alignments

THE JOB JESTER

CARTOONS DRAWN FOR CONSTRUCTION METHODS



"And if it works, I'll get home each night five minutes earlier."



"I'm sorry but the specifications don't call for any stonework on this job."



"Wouldn't you like to hold it for a minute?"

Fall Nights

TURN COLD SUDDENLY

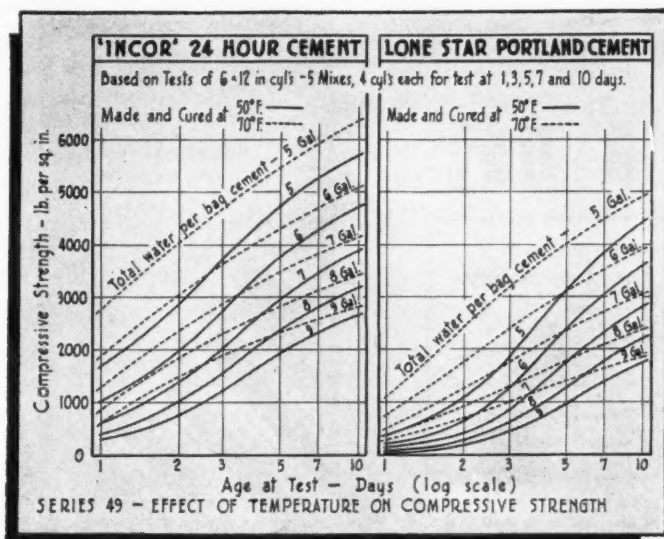
*Play Safe—
Use 'Incor'*

COLD sneaks up on you in Fall . . . sunny days often give 'way to near-freezing nights. Daily temperatures averaging around 50 degrees slow down the hardening of concrete . . . job schedules suffer.

That's why 'Incor' 24-Hour Cement is a big help: Without protection, at 50 degrees—a common Fall condition—'Incor' concrete attains stripping strength, is safe from freezing risk, 2 or 3 days sooner than concrete made with ordinary portland cement. By using 'Incor', you **MAINTAIN STRIPPING SCHEDULES . . . PREVENT JOB SLOW-DOWN . . . SAFEGUARD AGAINST FREEZING.**

The lower the temperature, the greater the 'Incor' economies. Even in dead of Winter, 'Incor'* concrete is service strong, safe from freezing, with only **ONE-DAY** heat curing at 70° . . . saving 2 or 3 days heating expense on each pour, which means real money at present costs of fuel and labor! For timely book, "Cold Weather Concreting," write Lone Star Cement Corporation, 342 Madison Ave., New York 17, N. Y.

*Reg. U. S. Pat. Off.



LONE STAR CEMENTS COVER EVERY CONSTRUCTION NEED

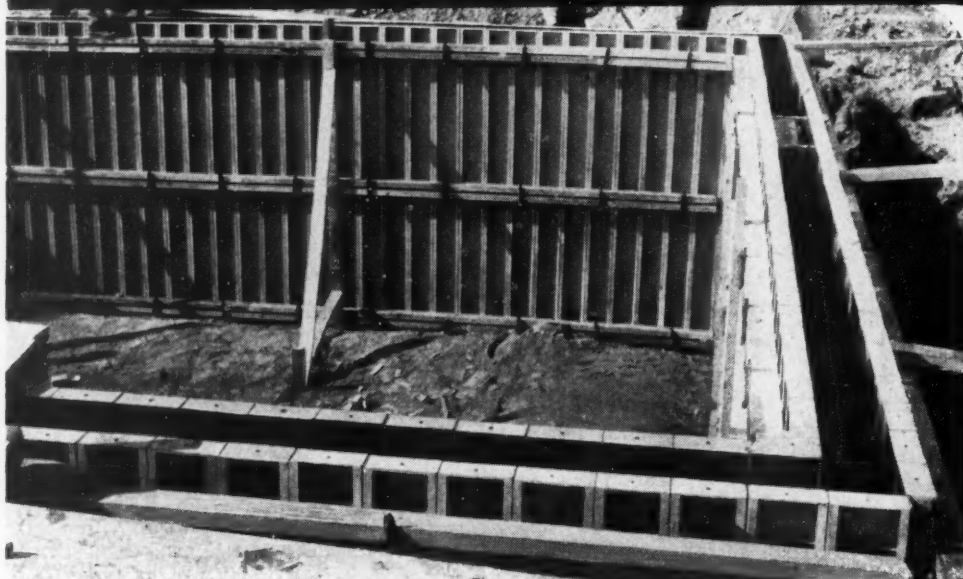


LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS.
KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK • PHILADELPHIA • ST. LOUIS • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 25,300,000 BARRELS ANNUAL CAPACITY

ATLAS LABOR-SAVING *SPEED* FORMS



Housing Project at Portchester, N. Y. Portchester Fuel Company, Developers.

A House Foundation A Day

New Process for Concrete Construction For Rent or Sale

Engineers and Contractors are amazed at the speed and savings they make with Atlas STEEL Forms. In housing projects, they get a sound, water-proof foundation a day, including stripping, moving, erection and pouring at a much lower cost than with cinder block or wood forms. In apartment house, Industrial and heavy construction, they make savings of 25% and more in comparison with wood forms. Finish is smooth and uniform—no grain marks—nothing to remove. Irregularities and inserts are easily accommodated. Light-weight—anyone can lift them. Strongly built of steel—good for an indefinite number of uses.

Available for Early Delivery

Send for Illustrated Folder

Irvington Form & Tank Corp.

Write—Dept. CM

Tel. Bowling Green 9-4030

Irvington 13, New York

N. Y. City Sales Office—

43 Cedar Street

Some New Users

The Tyler Corp., Falls Church, Va.
Housing Project
Churchill Fulmer Assoc. N.Y.C., Arch.
Progar Bldrs. Inc., Radburn, N. J.
Housing Project
Fred J. Roughgarden, Hawthorne,
N. J., Arch.
Worsham Bros., Knoxville, Tenn.
Housing Project
Louis Belli, Inc., Flushing, L. I.
Housing Project
Sanderson & Porter, Frankfort, Ky.
National Distillers Bldg.
A. Friederich & Sons, Rochester,
N. Y.
Gen. Railway Sig. Co.
H. L. Stone & J. G. Shea, Archs.
H. K. Ferguson Eng. Co., Cleveland
Sherwin Williams Plant,
Cleveland, Ohio
Homer T. Borton, Arch.
A. J. Glaser, Muncie, Ind.
Saginaw Malleable Iron
Works, Danville, Ill.
General Motors Corp.,
Arch.

Everyone wants
a House
With a Sound
Foundation and
Dry Cellar



3 Units Atlas
SPEED
Forms.

PATENT PENDING

Costs Less Than
Cinder Blocks

Because you Save both
on labor and materials.

Better Than
Concrete Block

Solid and easier to
waterproof.



WEDGE BOLT

Speedy Erection—Forms
go together quickly
with no thread bolts.

Union Carpenters Will
Handle Speed Forms.

Light Weight—Even a
baby can handle them.

ATLAS STEEL FORMS FOR EVERY PURPOSE

MOVING 700 CU. YDS. PER HOUR

ON 1,200,000 CU. YDS. GRADING CONTRACT



● On the Shirley Memorial highway extension southwest of Washington, D. C. in the Alexandria-Accotink area, the Nello L. Teer Company has been using a Euclid Loader and Bottom-Dump Euclids to move a major portion of the yardage on this big job.

On the section shown in the illustrations, the Loader delivered from 10 to 11.5 bank yards of sandy clay and gravel into Bottom-Dump Euclids in an average of 30 seconds and 80 feet of travel distance. Despite frequent turning made necessary by a very short cut, the Loader averaged 64 heaping loads per hour. On the 1500 ft. round trip, five Bottom-Dump Euclids hauled an average of more than twelve payloads each per hour. Actual production records of the contractor show from 6500 to 7000 bank yards moved per 10-hour day by this equipment.

The performance of the Euclid Loader and Bottom-Dump fleet has been a major factor in keeping this job ahead of schedule and has enabled the contractor to move dirt fast and efficiently. Your Euclid Distributor or Representative will be glad to furnish information and specifications on Euclid earth moving equipment best suited to your needs and can probably refer you to a job in your own locality where you can see "Eucs" at work.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

Coordinated control of crawler tractor and Loader is achieved by placing the three hydraulic control levers within convenient reach of the operator—eliminates need for additional operator on Loader.



Heaping loads of 10 to 11.5 bank yards delivered to Bottom-Dump Euclide in one-half minute — Loader maintains accurate grade.



Maneuverability and fast dumping of Bottom-Dumps reduced cycle time and kept Loader at full efficiency.





Performance **PLUS** Endurance Wins!

The fastest sports event in the world—Ice Hockey—demands the *utmost* in performance and endurance . . . no other test of skill can measure up to the call put to every player—regardless of his position.

Industry, too, has its specific wire rope standards—especially as to strength and adaptability. Whenever the job calls for dependable performance, "HERCULES" (Red Strand) can be relied upon to complete the operation—*economically*.

Since there is a type and construc-

HAVE YOU TRIED
Preformed
"HERCULES"
RED STRAND
WIRE ROPE
—?—
IT'S TOPS AS
A
MONEY SAVER

tion especially made to fit every *heavy duty* requirement in *your* industry, you use good judgment when you select "HERCULES" (Red Strand) Wire Rope.

When an especially 'tough job' comes up—consult our engineering department.

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS
5909 KENNERLY AVENUE

NEW YORK 6 . . . 90 West Street
CHICAGO 7 . . . 810 W. Washington Blvd.
DENVER 2 . . . 1554 Wazee Street



ESTABLISHED 1857
ST. LOUIS 12, MISSOURI, U. S. A.

SAN FRANCISCO 7 . . . 520 Fourth Street
PORTLAND 9 . . . 914 N. W. 14th Avenue
SEATTLE 4 . . . 3410 First Avenue South



Tire costs slashed—two mountains moved for the price of one

IF YOUR trucks work on tire-punishing jobs such as hauling rock, dirt, coal, here's news that can save you money. A careful check was made recently by a company using B.F. Goodrich Universal Tires (shown above on rear wheel). These records revealed that six Universals averaged 4571 hours of service. Tires of another make had averaged only 1600 hours. Universals moved more than twice as much material for the same tire cost.

Here's the "why" for that exceptional service. B.F. Goodrich engineers developed a new construction principle—the *shock shield*—built it in under the tread.

This shield is a set of four breakers—layers of rubber-coated rayon cords—built in between the tread and the plies. The breakers are in pairs, with the cords in each pair running parallel to each other, but with each pair running in opposite directions to give balanced strength. The breakers are cushioned with thick layers of special shock-resistant rubber.

Under impact, the cords in the breakers stretch together, *not* across each other, and return to their original position. The blow is distributed and absorbed by the rubber cushions; any shock passed on to the cord body is greatly reduced.

The B.F. Goodrich Universal has other advantages. It gives excellent traction in *either* direction. It's self-cleaning, resists sideslip. Users report fewer bruises, lower repair bills, and that more tires can be retreaded. For Universals, or other types of off-the-road tires designed for your needs, check with the B.F. Goodrich dealer. Or, write us direct. *The B.F. Goodrich Company, Akron, Ohio.*

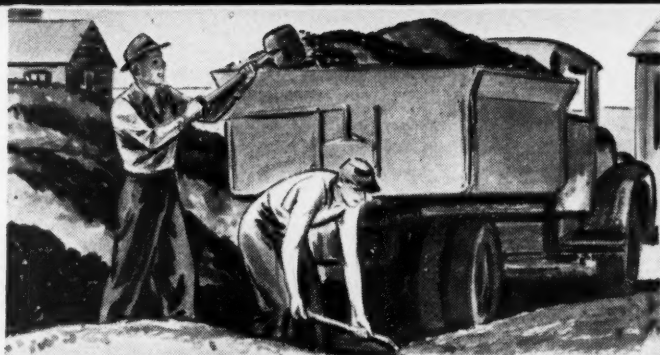
Truck Tires BY
B.F. Goodrich

Thermoid — For Progress in Industry

The makers of the Beltloder have standardized on Thermoid belting for many years because it has proven itself capable of standing up under hard punishment. Exposure to weather, high angle of operation, intermittent loads, various kinds of materials all put the Beltloder and its Thermoid belting to an extreme test. The toughness and super-flexibility of Thermoid belting permits the use of a very small idler pulley on the Beltloder, making it possible to bring the belt closer to the ground and with less difficulty to push the conveyor into the pile of material to be moved.

This is just one of hundreds of instances of the way Thermoid—working with designers, engineers and production men—has aided industrial progress. Whatever your problem in the field of materials handling or power transmission, you owe it to yourself to consult your Thermoid Representative. Like so many others, you may find—It's Good Business to Do Business with Thermoid."

THE THERMOID LINE INCLUDES: Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products • Molded Hard Rubber and Plastic Products.



Loading coal the costly, old-fashioned, back-breaking way.

★ ★ ★

Fast, economical coal-loading with the Thermoid-equipped Beltloder. On this rigorous job, users estimate that a single Thermoid conveyor belt handles as much as 100 thousand tons of coal.



Thermoid Rubber

DIVISION OF THERMOID COMPANY
302 Whitehead Road, Trenton 6, New Jersey

Contributor to Industrial Advancement Since 1880

You'll find the **NORTHWESTS**
in the **TOUGH DIGGING**



across the country -
Maine to California -

Built to take the punishment of rock digging, they bring you advantages that mean output in the toughest going.

The Northwest Dual Independent Crowd utilizes force other shovels waste. The Northwest Welded Boom with its rugged sticks tied together at the inner-end provides a front-end that will stand up to the toughest digging you'd ever put a shovel in. The Cushion Clutch eliminates the effects of stock overload to parts under power when the dipper hits an immovable rock. Uniform Pressure Swing Clutches take the grabs and jerks out of swinging, and last but not least the "Feather-Touch" Clutch Control assures easy operation, yet retains the feel of the load.

Mark it up for those future jobs you are going to bid on — it's a money maker.

NORTHWEST ENGINEERING COMPANY

1728 Steger Building

• 28 E. Jackson Boulevard

• Chicago 4, Illinois



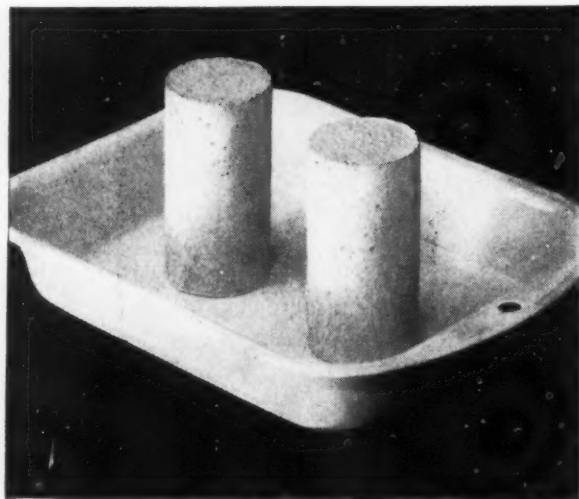
*If you have
a REAL
ROCK SHOVEL
you never
have to
worry about
output in
dirt!*

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

BRIXMENT MORTAR

Is More Durable



To compare the durability of two mortars, make a cylinder or block of each, let them "cure" for a month or so, then freeze and thaw them forty or



fifty times, with a little water in the pan (the freezing unit of your electric refrigerator will do). Try this with Brixment mortar!

—AND DURABILITY MEANS PERMANENT STRENGTH AND BEAUTY

For permanent strength and beauty, mortar must be *durable*—must be able to withstand the alternate freezing and thawing to which it is subjected many times each winter.

Brixment mortar is *more durable*. This greater durability is due partly to the strength and soundness of Brixment mortar, and partly to the fact that Brixment is waterproofed during man-

ufacture. This waterproofing helps prevent the mortar from becoming saturated—therefore protects it from the destructive action of freezing and thawing.

Walls built with Brixment mortar therefore *retain* their original strength and appearance. . . . Even in parapet walls and chimneys, where exposure is particularly severe, Brixment mortar will almost never require repointing.

LOUISVILLE CEMENT CO., Incorporated, LOUISVILLE 2, KENTUCKY
CEMENT MANUFACTURERS SINCE 1830

Down-to-Earth Engineering

GAR WOOD Cable Controls Feature
Rugged Simplicity and Direct Action Pull



Cable Dozercaster

The cable goes direct to the job in GAR WOOD Cable-Controlled Road Machinery. As a result, it has fast action, positively controlled.



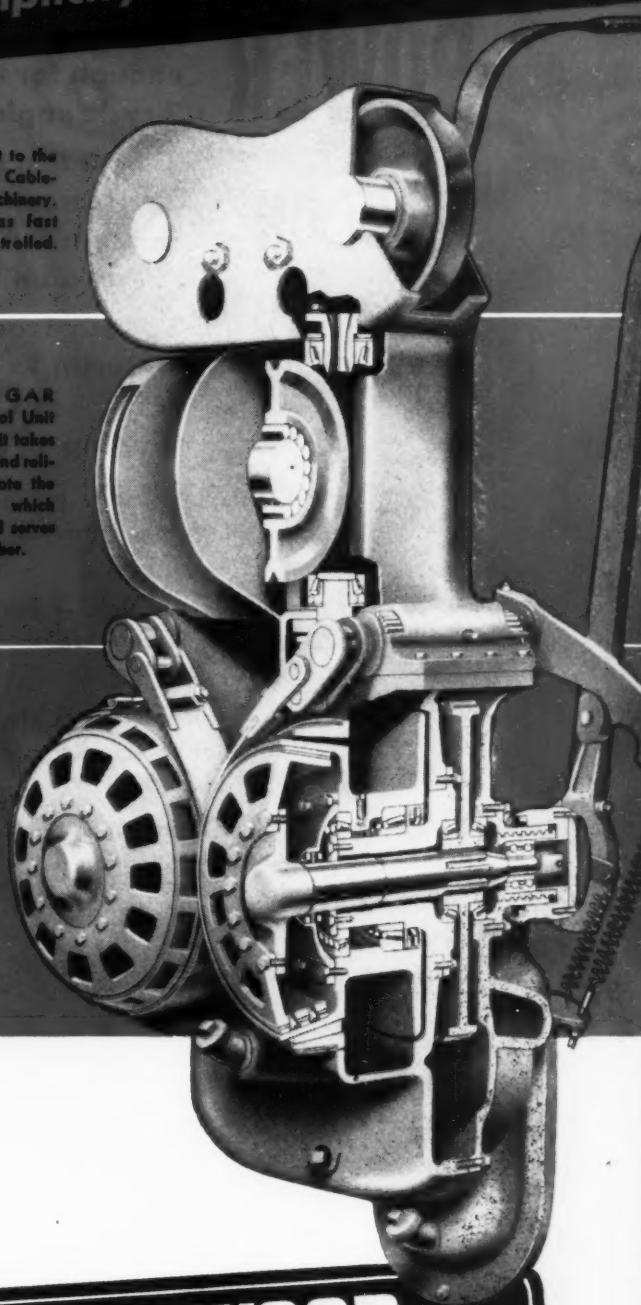
Heavy-Duty Cable Ripper

The job-proved GAR WOOD Cable Control Unit (right) has everything it takes for smooth operation and reliable performance. Note the sturdy steel housing which prevents distortion and serves as a lubrication chamber.



4-Wheel Cable Scraper

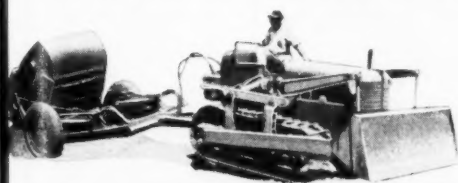
Outside clutches and servo-type, self-aligning brakes cool themselves and are readily accessible. Roller bearings throughout and servo-type gears keep adjustments at a minimum.



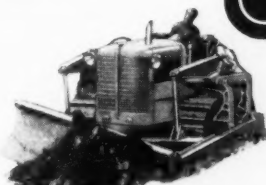
PROVED through the years on the toughest of jobs. Made more rugged than ever by the lessons learned in war action on every front, from Guadalcanal to Okinawa and from Oran to Berlin.

GAR WOOD Road Machinery and the famous GAR WOOD Cable Control Power Unit offers practical design and sound construction, well engineered and honestly built—equipment that *holds together* and can be operated with an absolute minimum of down time. *If it's GAR WOOD, it's good.*

See your Allis-Chalmers dealer. He'll be happy to give you all the facts and show you Gar Wood Earth Moving Equipment *on the job* in your own vicinity.



Gar Wood 2-Wheel Hydraulic Scraper and Bulldozer



Gar Wood Hydraulic Dozercaster

OTHER GAR WOOD PRODUCTS: HOISTS AND BODIES • TANKS • WINCHES AND CRANES • HEATING EQUIPMENT • MOTOR BOATS

GAR WOOD
ROAD MACHINERY
WITH ALLIS-CHALMERS DIESEL POWER



Sold Through
ALLIS-CHALMERS
Dealers Everywhere
ROAD MACHINERY DIVISION
GAR WOOD INDUSTRIES, INC.
DETROIT 11, MICHIGAN

You get all

POWER

75 Diesel horsepower — more than enough for the toughest kind of work. 2-cycle engine efficiency and economy!

TRACTION

21,500 lbs. total weight...with 15,660 lbs. concentrated on the four rear Tandem wheels, that drive together . . . as a unit!

CLEARANCE

22-inch front axle clearance allows material to flow freely to moldboard — no hanging-up on windrow, no wasting h.p. pushing a dead load.

Plus a full range of blade positions and leaning front wheels to handle all types of grading with ease.

Plus simplified operation — easier steering and control, electric instruments, electric brakes, full operator comfort.

Plus a larger capacity, longer life, easier-to-operate clutch . . . gears that automatically lock in place . . . a tubular frame that resists all twists and strains.

Together these Model A-D features mean more work done, more accurately, at lower cost...a better job on every job!

THE A-D MAKES
EVERY PASS COUNT
ON OIL MIX WORK!



THE A-D MAKES
EVERY PASS COUNT
ON EVERY JOB!..

SLOPING



DITCHING

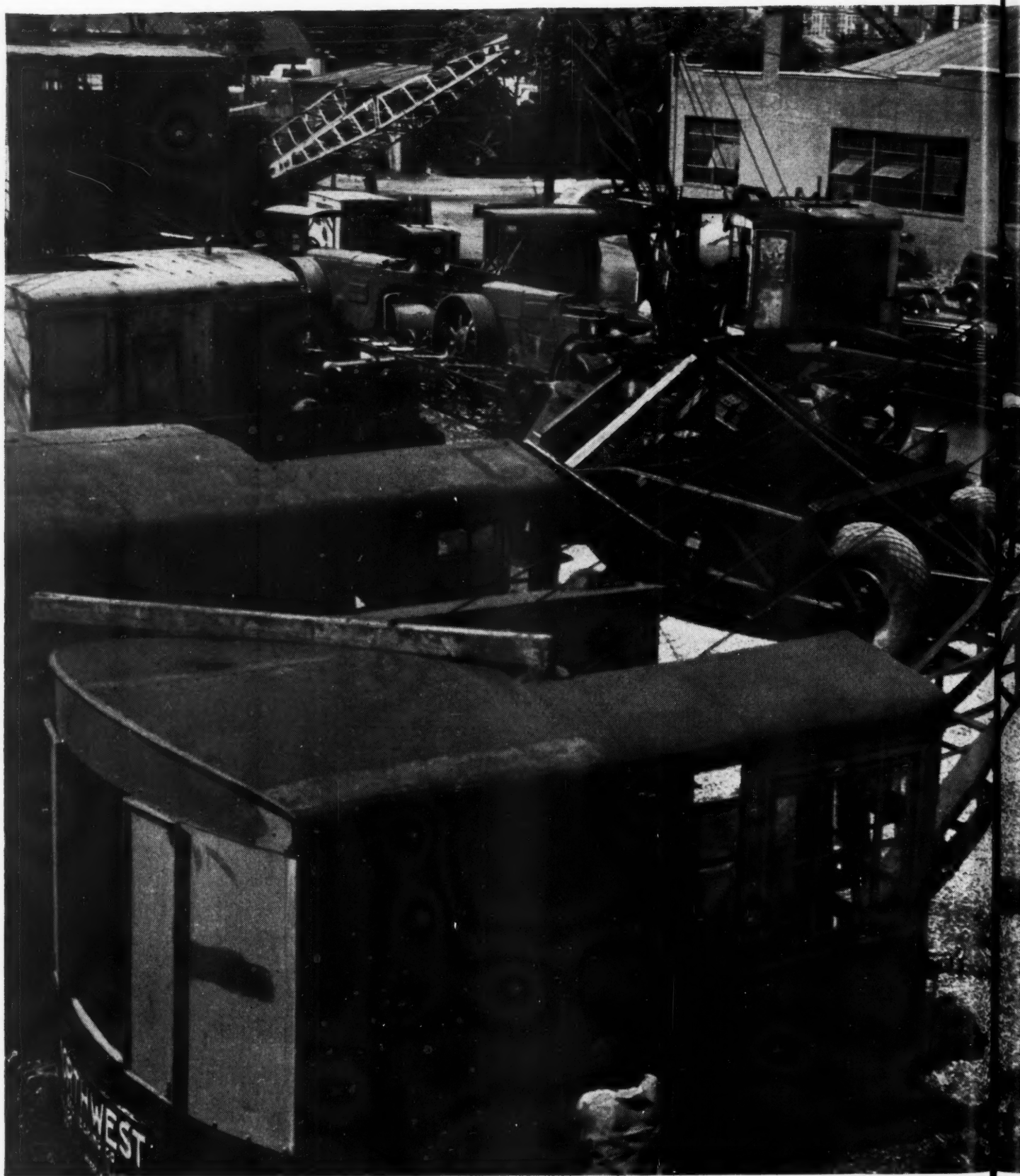


GRADING
SURFACE

with the model A-D

ES
DUNT
WORK!

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



TUNE IN THE
TEXACO STAR THEATRE
EVERY SUNDAY NIGHT
— CBS



TEXACO

PROTECT

YOUR EQUIPMENT AGAINST

RUST

SIMPLY brush *Texaco Rustproof Compound* over exposed metal surfaces. The resulting soft, self-healing, *waterproof* film will give effective protection — usually for a year, at least. *Texaco Rustproof Compound* also removes easily, and is distinctly economical. The cost of Texaco rustproofing every piece of equipment in your yard is far less than the cost of the damage rust may cause to just one machine.

Texaco Rustproof Compound fights rust three ways. It 1) prevents rust from forming; 2) penetrates existing rust and

stops further rusting; and 3) loosens existing rust, makes it easy to remove.

Use *Texaco Rustproof Compound* on all metal construction equipment, and on gas holders, water works, sewage disposal plants, bridges — wherever metal is exposed to weather or corrosive chemicals and fumes.

For prompt delivery of *Texaco Rustproof Compound* simply call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



FREE! This 36-page booklet tells all about *Texaco Rustproof Compound* — why it prevents rust, where and how to apply it, and how it can add extra years of life to your equipment. A single suggestion in this book may save you thousands of dollars. Write for your copy today.

Rustproof Compound



union
Wire Rope



PORTLAND 10, ORE.
Office and Warehouse,
2415 N. W.
22nd St., Tel. Broadway
9475, C. J.
Schooley, Dist. Mgr.

MUTCHINSON, KS.
Sales Engineer, J. Dee
Lewis, 108 West 11th
St., Tel. 2863.



LYNWOOD, CALIF.
Sales Engineer, R. C.
Hobby, 3877 Walnut.



OKLAHOMA CITY, OKLA.
Sales Engineer, L. P.
Nixon, 3421 N. W. 21st
St., Tel. 9-4469.



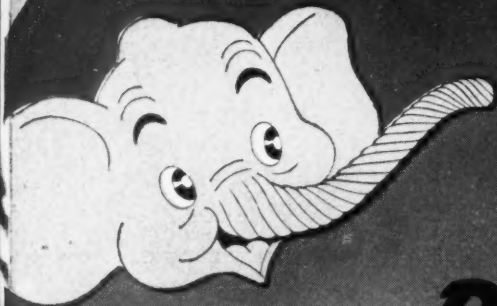
TULSA 3, OKLA.
Office Beacon Bldg.,
Tel. 3-6277, J. A. Under-
kofler, Dist. Mgr.



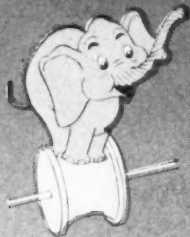
ODESSA, TEXAS
Sales Engineer, Frank
Morris, 1122 N. Sam
Houston, P. O. Box
3272, Tel. 1048.



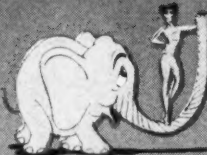
HOUSTON 11, TEXAS
Sales Engineer, Nelson
M. Sullivan, 5803 Nav-
igation Blvd., Tel.
Woodcrest 6-4401.



union-formed *For Long Lived* **PERFORMANCE**



**UNION-FORMED
SPOOLS BETTER**
... even with a
light load it winds
evenly and tightly.

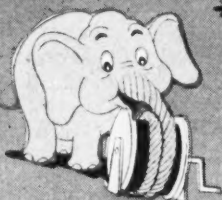


**UNION-FORMED
RESISTS KINKING**
... because wires and
strands are free of in-
ternal stress, they do not
fight to get out of their
preformed positions.



**UNION-FORMED HAS
GREATER RESISTANCE
TO BENDING FATIGUE**
... withstands more
bends, even reverse
bends, because it is
more stress-free inter-
nally.

**UNION-FORMED RIDES
BETTER ON GROOVES**
... does not spin over
sheaves or grind
through blocks.



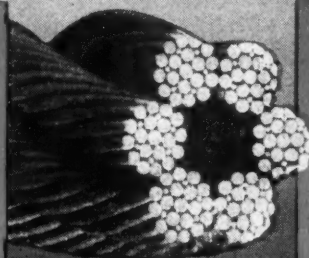
**UNION-FORMED IS
SAFER TO HANDLE**
... worn, broken wires
do not spring out and
porcupine but con-
tinue to lie close to
the rope.



**UNION-FORMED IS
FLEXIBLE and RELAXED**
... bends in any direc-
tion, yet has "tough-
ness" to withstand jerk-
ing and other punishing
strain.



union-formed
(Preformed)



**THE ULTIMATE LOW COST
WIRE ROPE**

Rope
Wire
Mini



CHICAGO 2, ILL.
Office and Warehouse,
1144 N. Branch St.,
Tel. Michigan 2490
Robert B. Board, Dist.
Mgr.

PARRISBURG, PA.
 Engineer, H. M.
 8 Park
 Circle, Hill,
 Pa., Tel. Parrisburg
 48208.

KANSAS CITY, MO.
Home Office and Fac-
tory, 21st and Man-
chester Ave., Tel. Ben-
ton 3100. Sales Engi-
neer, L. A. Price.

WOOSTER, OHIO
Sales Engineer, E. A.
Neise, 339 So. Mar-
ket St., P. O. Box
434, Tel. 1886-W.

LITTLE ROCK, ARK.
Sales Engineer, J. P.
Orahoad, P. O. Box
175, Route 2, Tel.
3-8555

ASHLAND, KY.
Office and Warehouse
23rd and Front St.
P. O. Box 950, Tel.
3123. F. F. Raphael, Dist.
Mgr. Sales Engineer.
Kermit C. Rice, 23rd &
Front St., P. O. Box
950. Tel. 3123.

NEW ORLEANS, LA.
Office and Warehouse,
1539 Julia St., Corner
Freret St., Tel. Mag-
nolia 3781. C. G.
Ratzlaff, Branch Mgr.
Sales Engineer, Nelson
H. Sullivan, 5803 Navi-
gation Blvd., Tel
Woodcrest 6-4401.

OWENSBORO, KY.
Sales Engineer, C. A.
Shacklette, 2115 Griff-
ith Place. Tel. 2634

COLUMBUS, GA.
Sales Engineer
George Galay, 147
Collins Drive, Benn-
ing Hills, Tel. 3-5378

Union's is an organization of specialists which devotes its whole time to bettering wire rope.

Here pictured is an important part—the link between user and Union's laboratory and factory. This staff of field specialists man Union's branch warehouses and offices. It works in the field with strategically located distributors.

This not only provides wire rope users with an S. O. S. (service on schedule) source of supply close at hand — it also equips each outlet with the extra "know-how" for proper wire rope application. The end result is better service from better wire rope better fitted to the individual machine and job.

You are urged to make full use of Union's staff of factory-trained field specialists and Union's library of books on wire rope usage.

UNION WIRE ROPE CORPORATION 2174 MANCHESTER AVE.
KANSAS CITY 3, MISSOURI

Send wire rope books as checked:

☐ Steel Tendons of Industry

Firm Name _____

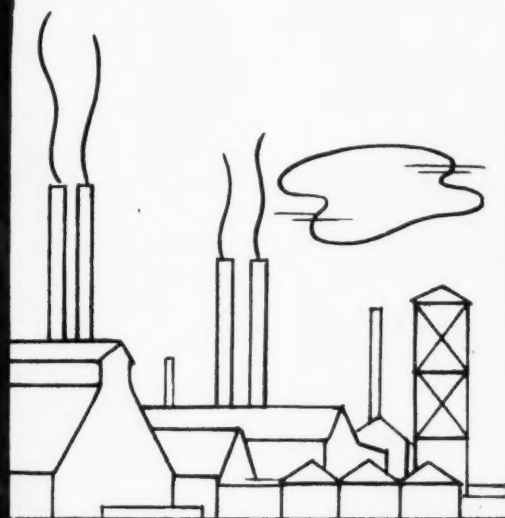
Address

City _____ Zone _____ State _____

☐ Rope Dope No. 1 ☐ Splicing Wire Rope ☐ Socketing Wire Rope☐ Wire Rope Lubrication ☐ Correct Handling of Wire Rope☐ Mining Rope Special ☐ Slusher Rope Special ☐ Choker Rope Special



*Meet the Man
who spends the Money
...the P.A.*



IT'S his duty to know whom to contact for countless items . . . his worry what to do about the promise someone didn't keep . . . his "headache" how to combat the often insistent demands of his sales department for "reciprocity" . . . his task to get around today's shortages. Yes, these and scores of other problems constantly beset the busy P.A.

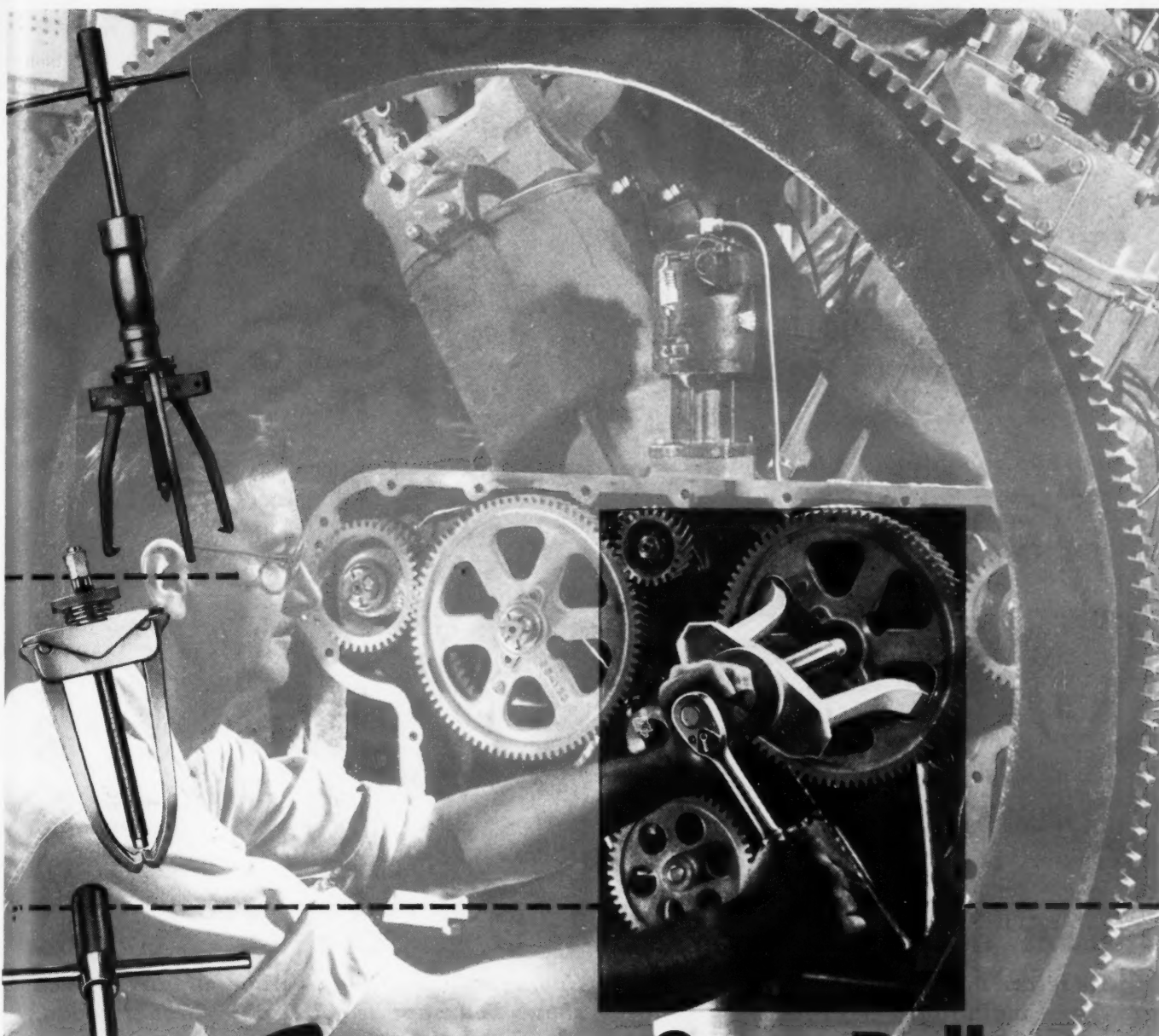
He is a mentally alert, highly trained, efficient individual, with technical "know-how" and a wide understanding of human nature. His keen sense of values serves him well in buying for his company the needed material with the greatest economy.

It is significant therefore, that over the years, wide-awake, progressive purchasing agents have learned to call on Levinson Steel for dependable Warehouse and Fabricated Steel Products.



THE LEVINSON STEEL COMPANY

PITTSBURGH



Snap-on Gear Pullers

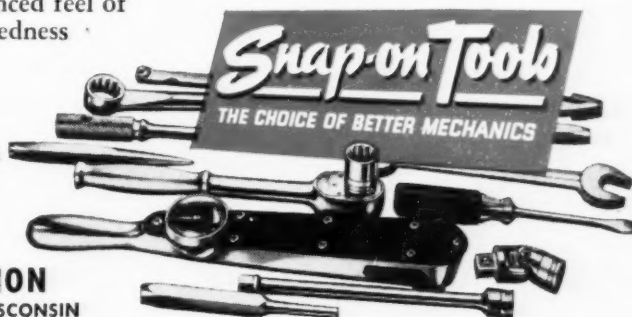
give you safe, uniform power over entire range

On the testing floor . . . in maintenance operations . . . wherever there is a need for gear pullers, Snap-ons are favored by men who know good tools. There are four definite reasons for this popularity: (1) Snap-ons have more "locking power" for added safety. (2) They give you a "tip-less" pull that prevents binding. (3) You enjoy smooth uniform power for easy pulling over the entire range. (4) Snap-on pullers are available in a wide range of types and sizes.

You'll like the comfortable, well-balanced feel of Snap-on pullers. They have the ruggedness and stamina that makes easy jobs out of the tough ones.

Ask the Snap-on man who calls at your plant for full details on Snap-on gear pullers or write for catalog of 3,000 Snap-on tools for industrial production and maintenance.

SNAP-ON TOOLS CORPORATION
8084-J 28th AVENUE KENOSHA, WISCONSIN



ENTIRE 1,500,000 YARDS River Dike Project



Tournapull spreads its load in 6" layer on the fill, as another high-balls back to the cut.



Empties return up 15% grade to cut over well-maintained haul road.



Engineers' monthly average of dirt moved shows Tournapulls get 11 pay yards per load.



Overall construction view of Colorado's Granby Dikes which will provide storage basin for more than 482,000 acre-feet of water.

LETOURNEAU
PEORIA, ILLINOIS



TOURNAPULLS
Trade Mark Reg. U. S. Pat. Off. C55

FOR LOWEST NET COST PER YARD

TOURNAPULLS HANDLE **on Colorado Big Thompson**



8 Tournapulls average 11 trips per hour on 3700' round trip ... keep Hesser Construction Co. ahead of schedule.

At 8200' altitude, Hesser Construction Co.'s 8 Tournapulls are pouring earth into Colorado's Granby Dikes on output records that L. J. Hesser says, "no other equipment will equal".

Working in clay and gravel, each Tournapull high-balls a 3700' round trip every 5½ minutes ... delivers 11 loads per hour. Rigs haul loaded down 5% grade over well-maintained road, which is sprinkled to keep down dust ... spread their loads in 6" layers on the dikes ... and return up 5 to 15% grades to the borrow area. To maintain this high rate of Tournapull production, Hesser occasionally uses both snatch and push tractors in extremely hard-loading materials. Project engineers' monthly estimate shows Tournapulls averaging 11 pay yards per trip.

Thus, the entire million and a half yards are being moved by these fast, big rubber-

tired Tournapulls ... with the job currently reported well ahead of schedule.

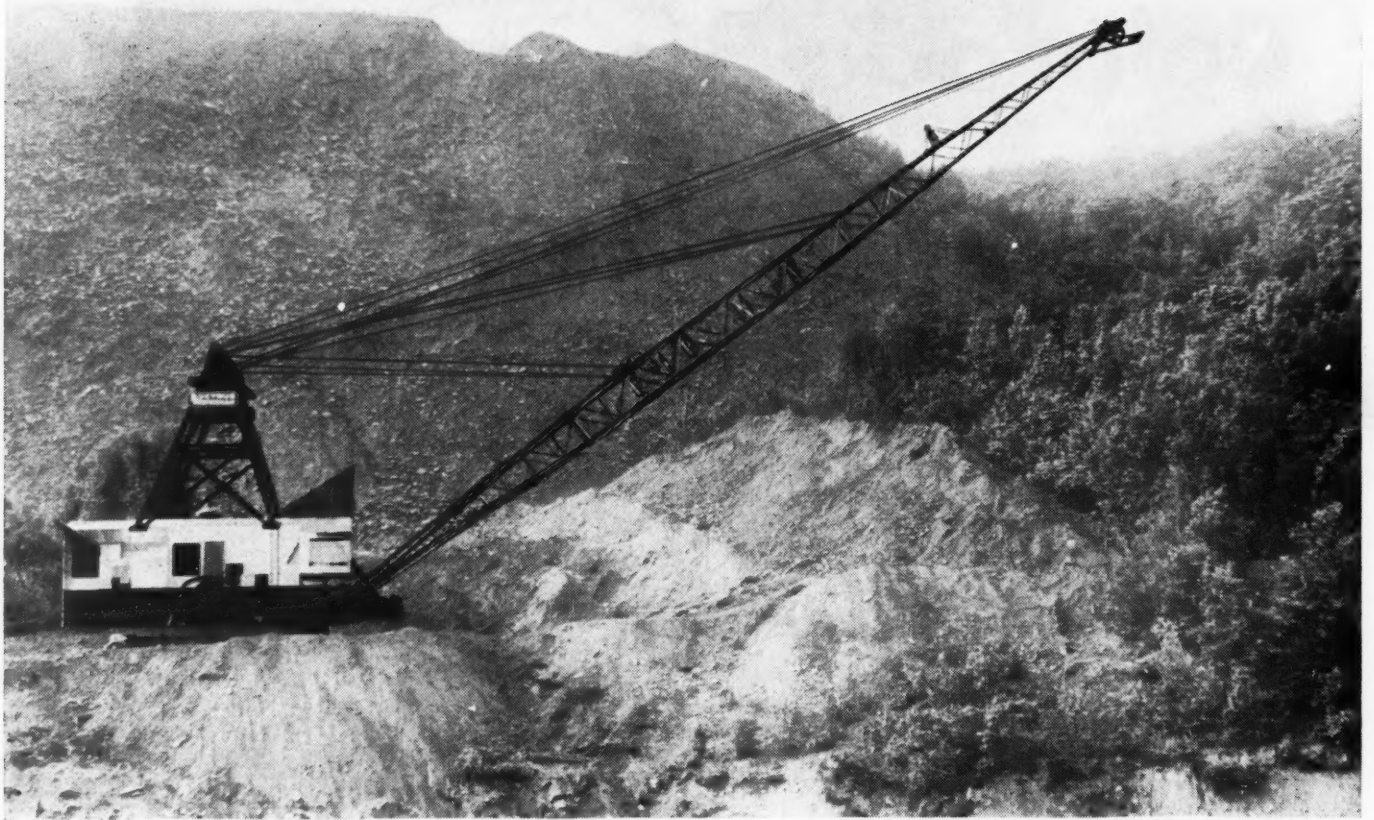
Tournapulls drive in from Greeley

The Tournapulls were driven in to the job via highway from Greeley, Colorado, making the 153 miles in 14 hours. This made it possible for the rigs to start moving dirt within 3 days after the contract was signed.

Hesser, a repeat Tournapull buyer, standardizes on LeTourneau equipment and has been specializing on landleveling and irrigation work with Tournapulls. Two of his rigs on the Granby Dikes have over 8000 hours and Mr. Hesser comments that "upkeep and maintenance have been very low."

Visit Granby ... see for yourself

By all means, if you get out to Colorado, look over this Tournapull job ... see for yourself what these modern, rubber-tired, high-speed dirtmovers can do ... or ask your LeTourneau Distributor for job-proved facts and figures of profitable Tournapull performance on all kinds of jobs ... in all types of materials ... on both long and short hauls.



THERE'S NO LIMIT ON SIZE

Size, alone, doesn't matter! C. I. T. finances purchases of almost every type of construction equipment . . . and whether the amount involved be large or small, the funds can be obtained quickly and **AT LOW COST.**

Contractors acquire new and used equipment by making only moderate initial investments. Working funds are left free for tax payments, supplies, pay rolls and other expenses. Terms are arranged which permit equipment to help pay for itself out of earning capacity.

Select the equipment you require . . . tell us what you want to buy . . . how you wish to pay for it. As quickly as delivery can be obtained, a C. I. T. check completes the transaction. Any of these offices will gladly arrange all details for you promptly.

ONE PARK AVENUE, NEW YORK

333 N. Michigan Avenue
CHICAGO

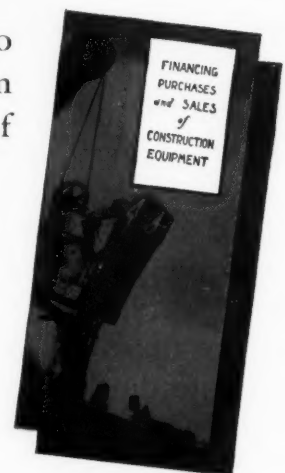
223 Peachtree Street
ATLANTA



660 Market Street
SAN FRANCISCO

416 West 8th Street
LOS ANGELES

In Canada: CANADIAN ACCEPTANCE CORPORATION LIMITED,
Metropolitan Building, Toronto, Canada



Send for a booklet explaining this construction equipment financing plan.

AFFILIATED WITH COMMERCIAL INVESTMENT TRUST INCORPORATED

ALL WHEEL DRIVE



"Moves Peak Pay Loads at Rock Bottom Cost"



The true measure of a truck's value is its ability to transport maximum payloads—*where you want them, when you want them—at minimum cost.* Unless your trucks perform all of these functions, *efficiently, reliably,* they are not giving you full value for your money.

Marmon-Herrington *All-Wheel-Drive* Trucks do give you your full dollar's worth—*because they never let you down.* *All-Wheel-Drive* power and traction—*front wheels pulling, rear wheels pushing*—guarantee that Marmon-Herringtons will get you there and back—*on time . . . regardless of weather or terrain—on the highway or off.*

Throughout, Marmon-Herrington *All-Wheel-Drive* Trucks are built in proportion to their great power and traction. Frames, axles, springs, transmissions—they're all built super-strong to take peak payloads—without a whimper . . . *and do it for years and years and years.*

Yes, Marmon-Herrington *All-Wheel-Drive* Trucks are built big for big jobs. For a convincing demonstration that these great trucks live up to their reputation—both the Heavy-Duty models and *All-Wheel-Drive* converted Fords—see your nearest Marmon-Herrington dealer, or write for illustrated literature.

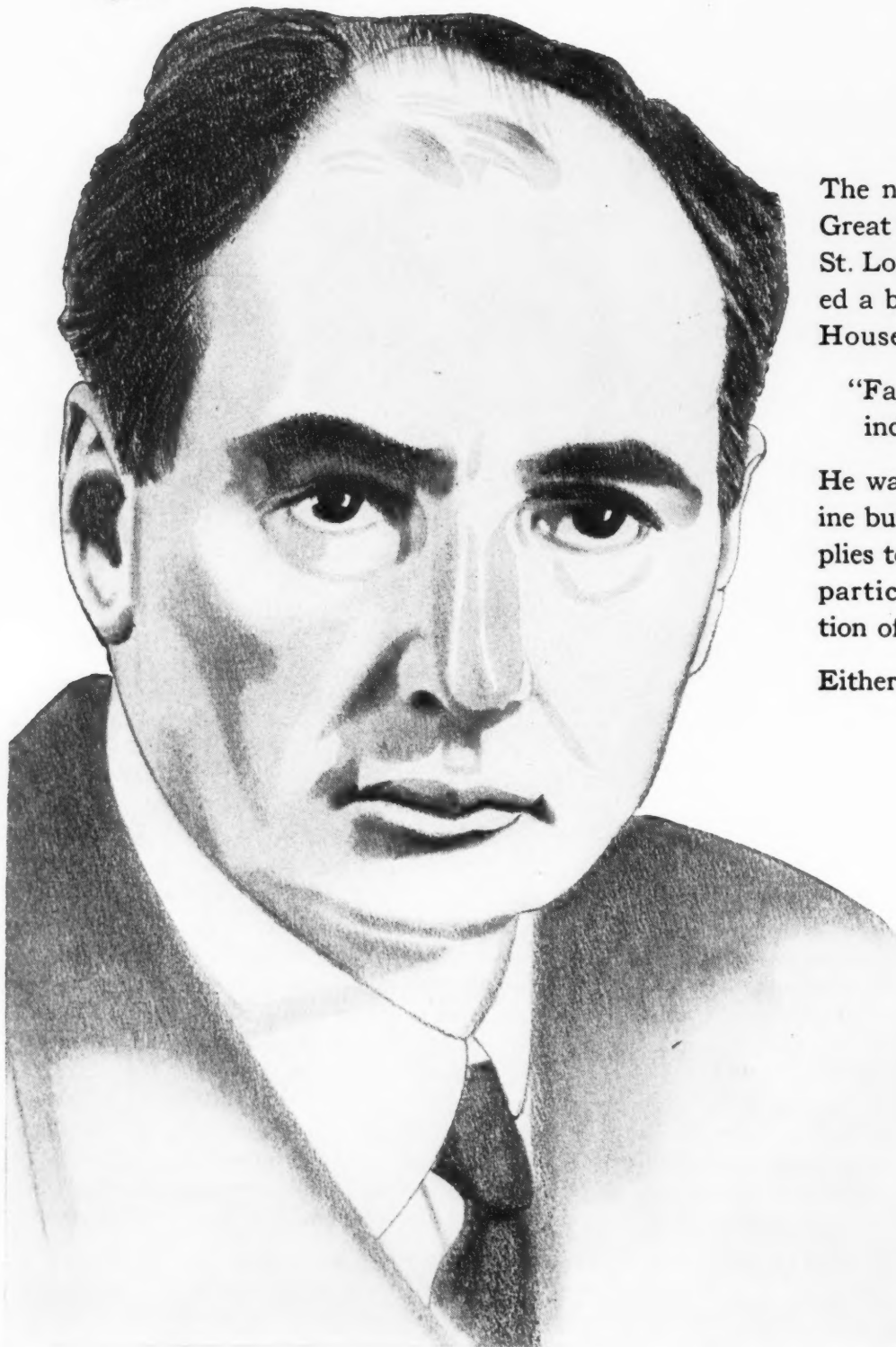
MARMON-HERRINGTON COMPANY, INC. • INDIANAPOLIS 7, INDIANA

MARMON-HERRINGTON

ALL-WHEEL-DRIVE

then he said to himself:

Either you eat . . . or you don't



The new Food Minister of Great Britain, Evelyn John St. Loe Strachey, highlighted a brilliant speech in the House of Commons with:

"Famine, like peace, is indivisible."

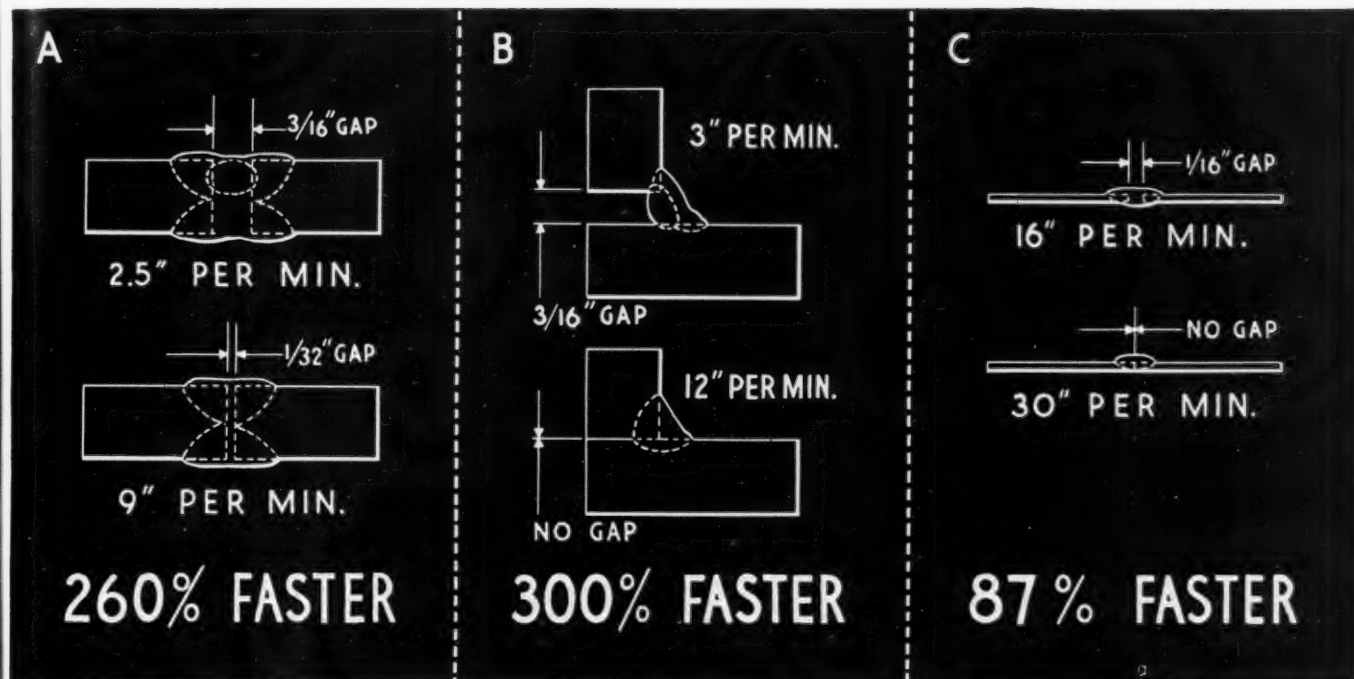
He was talking about famine but his phrase aptly applies to many conditions . . . particularly to the condition of modern production.

**Either you compete
. . . or you don't.**



MR. STRACHEY: Here's food for thought to help you get the full measure of competitive advantage from arc welding:

GET GOOD FIT-UP



Care in cutting, forming and fitting up of plates and shapes to be welded pays big dividends. By improving fit-up of joints, you increase welding speed and thereby cut costs and minimize distortion.

EXAMPLE A—This square butt joint in $\frac{3}{8}$ " plate with gap of $\frac{3}{16}$ " is made at an arc speed of 2.5" per min. With recommended gap of $\frac{1}{32}$ ", speed is 9" per min . . . 260% faster.

EXAMPLE B—This fillet weld in $\frac{1}{2}$ " plate, with $\frac{3}{16}$ " gap, is made at an arc speed of 3" per min. With no gap, speed is 12" per min. . . 300% faster. Both welds have a $\frac{5}{16}$ " throat.

EXAMPLE C—This butt joint in 14 ga. sheet, with

$\frac{1}{16}$ " gap, is made at an arc speed of 16" per min. With no gap, speed is 30" per min. . . 87% faster.



The sign of abundance. When you see 3 DOTS on an electrode, you know you have genuine "Fleetweld" . . . the world's leader for *low cost, speed and quality*. "Fleetweld" incorporates the full measure of Lincoln's pioneering research and worldwide engineering experience.

Handy pocket manual, giving, "Fleet-Welding" procedures for all types of joints in mild steel, free on request. Ask for Bul. 444.

THE LINCOLN ELECTRIC COMPANY

DEPT. 353

CLEVELAND 1, OHIO

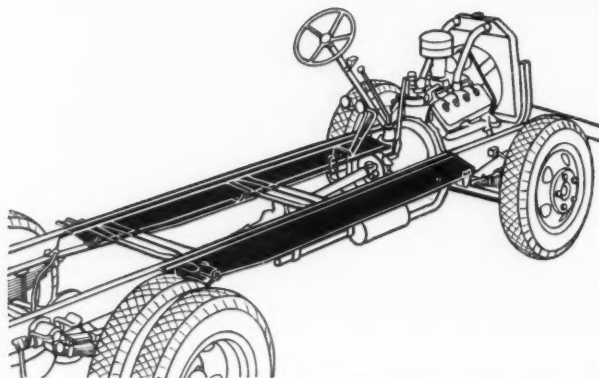
America's greatest natural recourse
ARC WELDING

REGISTRATIONS SHOW IT — OPERATORS KNOW IT!

"FORD TRUCKS LAST LONGER!"

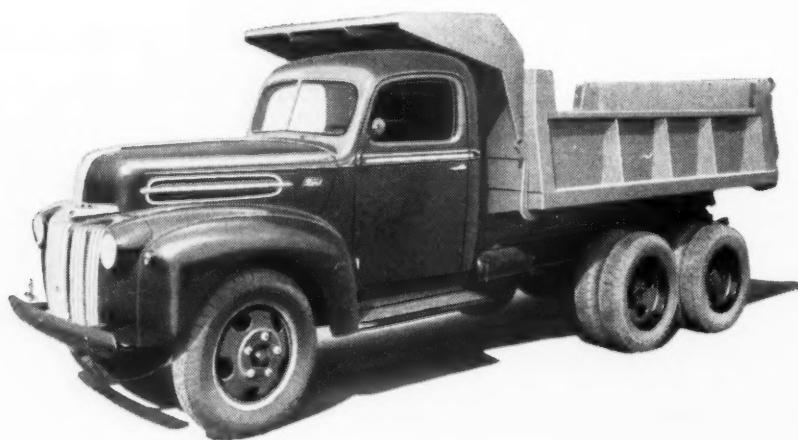


One big reason — FORD FRAMES STAND UP!




One of the big reasons why 78 per cent of all Ford V-8 Trucks ever built are still in use, is found in Ford frame engineering. Ford Light Duty Half-Ton units, for instance, have true *truck* frames—parallel side-rails—full SAE 34-inch width, taking standard bodies—rear kick-up and side-mounted springs for extra-low load height—alligator jaw cross-member—great strength and rigidity, for longer life to cab and body. The full-channel side-rails of Heavy Duty frames are *doubled* between springs, as illustrated, increasing side-rail strength 46 per cent—a construction far superior to old-fashioned fishplates.

Ford



Ford 134-inch wheelbase Heavy Duty Truck, with Thornton drive and 4-6 cubic yard Dump body by Anthony Co., Streator, Ill.

 Only Ford offers all these long-life features: choice of 2 great engines, the 100-H.P. V-8 or the 90-H.P. Six—Flightlight aluminum alloy, 4-ring pistons—short, rigid, fully counter-balanced cast alloy steel crankshaft—big brakes, with non-warping, score-resistant cast drum surfaces—extra heavy sheet steel in fenders, hood, cowl and cab—4-pinion differential with triple roller bearing, straddle-mounted axle drive pinion.

There are *more than fifty* such examples of Ford

endurance-engineering in today's Ford Truck. NO OTHER TRUCK BRINGS YOU ALL THESE IMPORTANT EXTRA VALUES AT ANY PRICE. Each one adds to the years of faithful service you can confidently expect from your Ford Truck. Let your Ford Dealer point them out to you.

FORD TRUCKS

MORE FORD TRUCKS IN USE TODAY THAN ANY OTHER MAKE

IT!

Just name it...

The TL-20 is "new" in more than just name. It's brimming over with new, advanced features—in boom, bucket, boom equipment and mounting. Check 'em, then stack up this unit for point against any other shovel crane in the 1/2-yd. class. It's first in the class for modern design, hustle and all-around utility.

Ask your local Lorain distributor for a close-up, on-the-job inspection of the new TL-20. You will want this new addition on your team in the competitive days just ahead.

THE THEW SHOVEL COMPANY
Lorain, Ohio

**THE TL-20's
GOT IT!**

- UNIT ASSEMBLY
- INTERCHANGEABLE PARTS
- 5 IDENTICAL CLUTCHES
- ANTI-FRICTION BEARINGS
- OIL-ENCLOSED CUT GEARS
- ONE-PIECE WELDED BED
- HOOK ROLLERS
- 2-SPEED CRAWLER
- DROP-FORGED TREADS
- POSITIVE TRAVEL LOCK
- "FULL CIRCLE" STEERING
- 9 RUBBER-TIRE MOUNTINGS
- ALL-PURPOSE CRANE BOOM
- POSITIVE INDEPENDENT SHOVEL CROWD
- GOOSENECK HOE BOOM



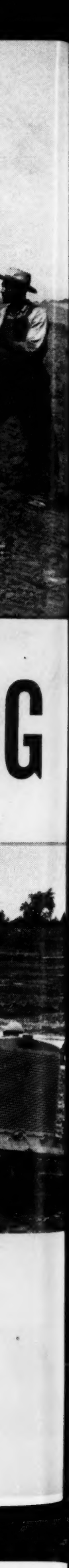
The NEW
Lorain

Thew
TL-20
Lorain



ALL-STAR EARTHMOVING





On a big levee-enlarging contract near Turrell, Arkansas, Stacy McAdams is moving a lot of yardage in a hurry with an all-star "Caterpillar" Zoned Equipment set-up.

• The equipment he uses includes one of the early types built by "Caterpillar"—a No. 48 Elevating Grader; and some of the newest—five "Caterpillar" Diesel DW10 Tractors with W10 Wagons. In addition, he has a "Caterpillar" Diesel D8 to pull the Elevating Grader; a D7 and a D6 equipped with bulldozers; and a No. 11 Motor Grader

for finishing. • Those fast-stepping "Caterpillar"

Diesel DW10s can make up to 18 miles per hour on

long hauls to the fill. Their 5-speed transmission

enables hauling the load surely up steep grades; and

finger-tip hydraulic steering makes it easy to put the

earth exactly where it is wanted. • Built to handle the tough jobs, and backed by complete, highly efficient dealer service, this rugged and powerful "Caterpillar" Diesel Earthmoving Equipment has no equal for *"lowest costs on earth."*

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR DIESEL

REG. U.S. PAT. OFF.

ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

CHECK THESE PROFIT-POINTS *For Greater* TRACTOR-LOADER PERFORMANCE



A
ELIMINATES
GEARS AND
CLUTCHES

B
LONG, LONG
TRACK
ASSEMBLY

C
CONVENIENT
HYDRAULIC
CONTROL

D
NEW, FASTER
DIGGING
BUCKET

- A** Hydraulic pressure actuates piston which drives cable drum — eliminates all clutches and gears.
- B** Long, long, (group 4F5510) track assembly on "Caterpillar" Diesel D4 Tractor assures correct balance, eliminating shock and untimely wear to track rollers and idlers.
- C** Single lever, convenient to operator, insures smooth, positive bucket control.
- D** More pay loads with new, faster-digging, cleaner-dumping bucket.

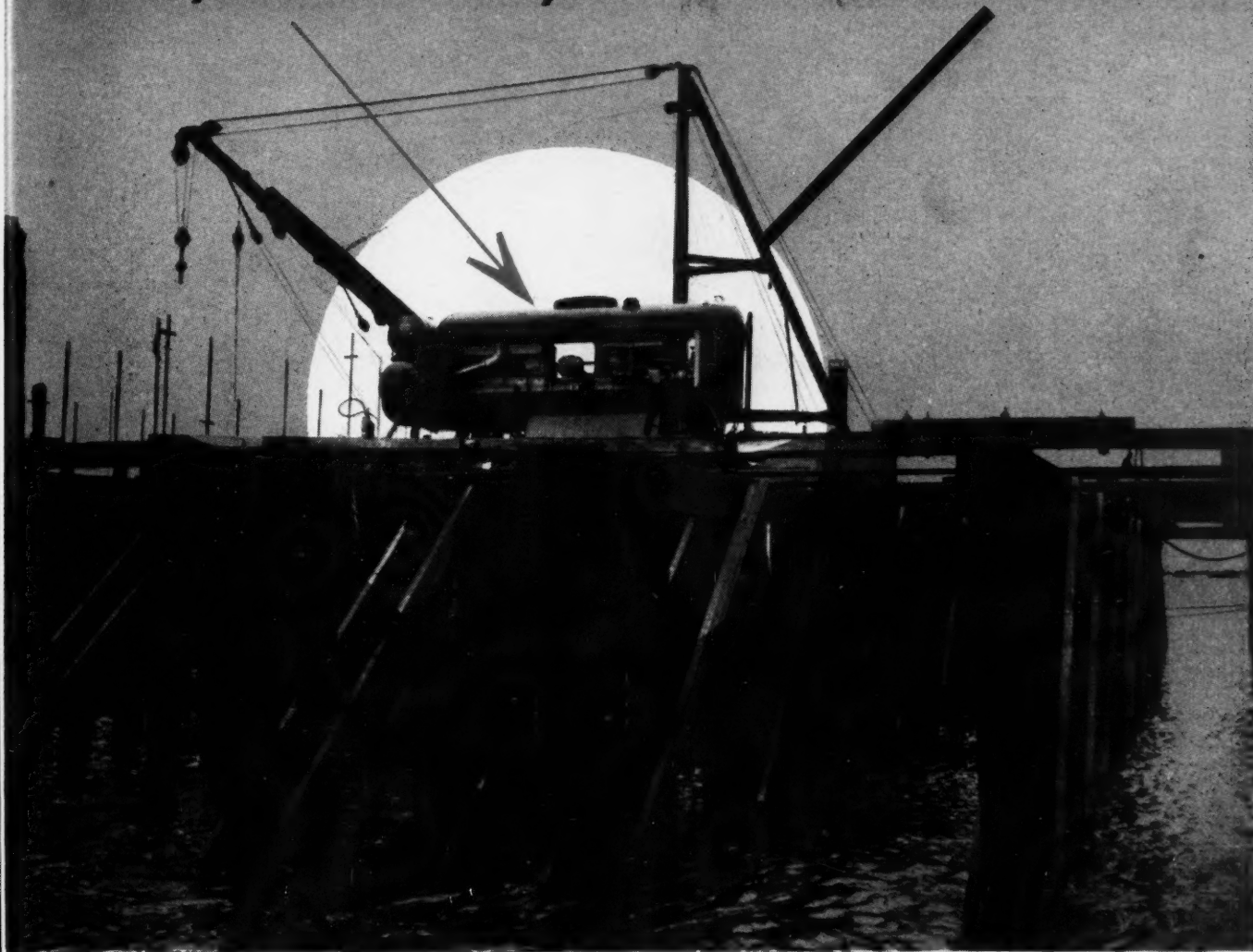
HERE'S a tractor-loader with greater digging and loading performance . . . with exclusive, simple, fast hydraulic control that enables you to hit new highs in production in most any materials. Its newly designed bucket makes it a capable digging unit — backed by the dependable power and traction of the "Caterpillar" Diesel D4 Tractor. Retaining the proved features of hundreds of Athey MobiLoaders in the field — adding new, exclusive features to increase production and ease of operation — the new Athey ML 4 MobiLoader is today's buy in the tractor-loader field! Ask your Athey "Caterpillar" Dealer about an early delivery of the new MobiLoader or write direct to

ATHEY PRODUCTS CORPORATION
Chicago 38, Illinois



New *Athey* ML 4 MobiLoader

Compressed Air for Construction Work



ANYWHERE

WITH SCHRAMM AIR COMPRESSORS !

Construction work indoors, outdoors, on land, on water . . . anywhere . . . Schramm Air Compressors are sturdy enough, compact and lightweight enough, to give you all the compressed air you want!

The construction field likes these Schramm features: 100% watercooled, permitting running with hood "on"; forced feed lubrication; mechanical intake valve; easy to move about on the job!

Schramm Compressors come in a complete range of sizes, to meet your needs. Write today for complete information on Schramm Compressors and Pneumatic Tools.

SCHRAMM INC.

THE COMPRESSOR PEOPLE
WEST CHESTER
PENNSYLVANIA



Special formula Macwhyte Internal Lubricant is packed around each wire in all strands of Macwhyte Wire Rope. This prolongs the rope's life by protecting the inside wires against rust and corrosion.

This "inside job" of

lubrication pays off in

longer wire rope service

Because it's thoroughly lubricated *on the inside*, Macwhyte Wire Rope lasts longer on your equipment. Our heavy, tenacious, special formula lubricant gives long-lasting protection. It is force-fed to wires as they are being closed into the strand. All wires, both inside and outside, are thoroughly encased in lubricant.

Macwhyte Internal Lubricant improves the sliding action of the wires as they move

in bending around sheaves and drums. It gives outside protection — but even more important, it protects the unseen inside wires which constitute the reserve strength and safety of the rope.

Extra life, assured by superior internal lubrication, quality materials and precision manufacture, makes Macwhyte Wire Rope your best buy.

NO. 857



MACWHYTE WIRE ROPE

Manufactured by Macwhyte Company
2941 Fourteenth Avenue, Kenosha, Wisconsin

Mill Depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth
Portland • Seattle • San Francisco • Los Angeles
Distributors throughout the U. S. A. and other countries

★ ★ ★ ★

MACWHYTE PREformed and Non-PREformed Internally Lubricated Wire Ropes . . . MONARCH
WHYTE STRAND Wire Rope . . . Special Traction Elevator Rope . . . ATLAS Braided
Wire Rope SLINGS . . . Hi-Fatigue Aircraft Cables, Assemblies, Tie-Rods . . . Stainless Steel
Wire Rope . . . Monel Metal Wire Rope, Galvanized Wire Rope.

Send for Macwhyte Wire Rope Catalog. Contains 170 pages of valuable information; lists Macwhyte's complete line. Ask any Macwhyte representative or write Macwhyte Company.

Make MACWHYTE your headquarters for WIRE ROPE AND SLINGS



BAKER

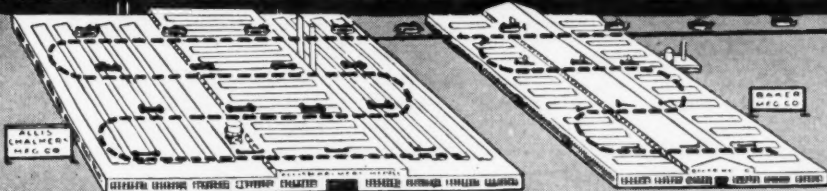


Watch a Baker 'dozer in action, as it smashes through the "toughest going"—digs in and rolls out more yardage than any other 'dozer on the job. Powerful hydraulic *Down Pressure* on the cutting edge makes the difference. The blade sinks in, bites through stubborn earth — moves more yardage with fewer passes — yet the operator "takes it easy."

Baker *Down Pressure* is one big reason why more and more users are standardizing on Baker Bulldozers and Gradebuilders; why there are more Bakers on Allis-Chalmers Tractors than all other makes combined.

BAKER MFG. CO., SPRINGFIELD, ILL.

"STRAIGHT THROUGH" ASSEMBLY LINE - ALLIS-CHALMERS TO BAKER TO YOU!



The modern Baker plant with its completely equipped fabricating, machining and blacksmithing shops adjoins the Allis-Chalmers crawler tractor plant. When you order an A-C tractor with Baker bulldozer or gradebuilder, your tractor leaves the A-C assembly line, crosses a narrow court and goes on the Baker final assembly line.

HURDLE

Time-wasting

SNAGS!



SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: Magnolia Petroleum Company, General Petroleum Corporation

This Complete Lubrication Service Helps Speed Work-Progress on Any Job!

QUESTION: Too many equipment failures slowing down operations — putting the jinx on output?

ANSWER: Whether you have 7 machines or 70 — regardless of type and make, we can help you minimize breakdowns and slowdowns — with exactly the *right* oil or grease for every part.

QUESTION: Looking for a *practical* way to short-cut refueling and lubrication?

ANSWER: We can arrange *regular on-the-job deliveries anywhere!* Result: Fewer and shorter field interruptions — fewer inventory problems — no bother with rush orders, follow-ups.

QUESTION: Is essential maintenance work throwing your machines off schedule?

ANSWER: Our representative helps you save time on overhauls and repairs — by supplying you with tested maintenance plans based on a study of *your* set-up, *your* equipment.

QUESTION: Are “problem” machines your problem? . . . Machines that seem to bog down in an emergency?

ANSWER: Besides giving you practical help with balky equipment, our representative can call on our vast engineering staff for expert counsel, in critical cases.

QUESTION: What about “green” help? Too busy to train them as well as you’d like?

ANSWER: Our representative can save you time in this department, too — by instructing inexperienced men on the Do’s and Don’t’s of Correct Lubrication. Consult him today.

Why Be Satisfied Merely With “Gas and Oil” When You Can Get Complete Service!

SOCONY-VACUUM
Contractors' Lubrication
SERVICE

CORRECT LUBRICATION
FOR EVERY PART
OF EVERY MACHINE
— Real Help with Maintenance Problems!

Tune in The Mobilgas Program, Monday Evenings, 9:30 E. S. T.—NBC

FASTENINGS

THAT DO THE JOB

Need tough, dependable fastenings for construction work . . . fastenings that you can count on for superior performance? Put your requirements up to Bethlehem.

Described below are some of the principal fastenings used in construction work. Bethlehem's Lebanon, Pa., plant is devoted entirely to the manufacture of fastenings and staffed with men who are fastenings specialists.

TIE-RODS

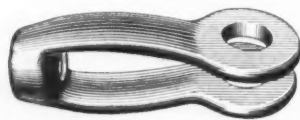
Furnished plain or upset, in single or multiple units, with either cut or rolled right- or left-hand threads. Come in sizes for every requirement. Single-unit tie-rods are normally furnished in lengths up to 46 ft. Multiple-unit tie-rods are supplied in any length. Bethlehem also supplies a full line of tank- and pipe-bands.



RIVETS

Small Rivets: $\frac{3}{16}$ in. and smaller, lengths 6 in. and shorter, with Button, Cone, Countersunk, Pan and Flat Heads.

Large Rivets: From $\frac{1}{2}$ in. to $1\frac{3}{4}$ in., inclusive, lengths from 2 in., in steps of $\frac{1}{8}$ in. Furnished with Swell Neck, or with Button, High Button, Countersunk, Round-Top Countersunk, Cone and Pan Heads.



CLEVISES

Furnished in all sizes, threaded to American Standard Coarse-thread Series, Class 2. Supplied with either right- or left-hand threads, with or without pin and cotter.



DRIFT BOLTS

Although usually round, Bethlehem drift bolts can also be supplied with square sections. Furnished in following styles:

Heads: Button, Countersunk, Square and Headless

Points: Wedge, Half or Semi-Cone, Full Cone, No Point



SPIKES

Have wedge points for easy driving, and a scaled corrosion-resistant surface. Furnished with Diamond, Button, Nail, Countersunk and Hook Heads.



WASHERS

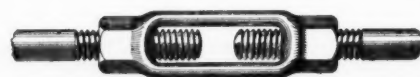
Round, square or rectangular. Round washers are made in two styles: standard and dock. Square and rectangular washers are made to order.



PLYWOOD AND TIMBER BOLTS

Plywood Bolt (A) provides 50 per cent more bearing surface under the head than a carriage bolt of equal size. It retards dry rot, and the flat head provides a flush surface which cannot damage the wood.

Timber Bolt (B) is economical because it eliminates one washer and counterboring. Retards dry rot, and will not turn in timber.



TURNBUCKLES

Made in a complete range of sizes, with standard 6-in. openings between heads. Can also be furnished with 12-in. openings.

BETHLEHEM STEEL COMPANY

Bethlehem, Pa.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Bethlehem supplies every type of Fastening





America's Most Complete Line of Material Handling Buckets

All purpose -

- **SHOVEL**
- **PULLSHOVEL**
- **DRAGLINE**
- **CLAMSHELL**

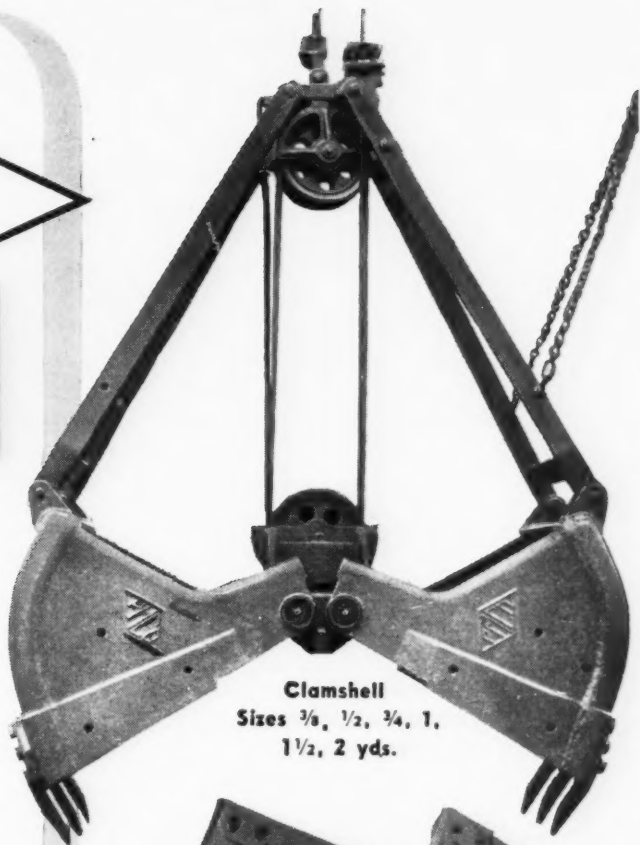
• FRONTS, BOTTOMS, SCOOPS and TEETH are 14% manganese steel developing tensile strength up to 120,000 p. s. i. This high percentage manganese steel gives tough, rugged strength for hard service and allows wide set corner teeth for easy entrance in digging. Volume production methods enable us to build a better bucket with amazing economies in manufacturing.

On the 1/2 yd. and 3/4 yd. Shovel, Pullshovel, and Dragline Buckets, all teeth are interchangeable — a great advantage to operators.



Experience Counts

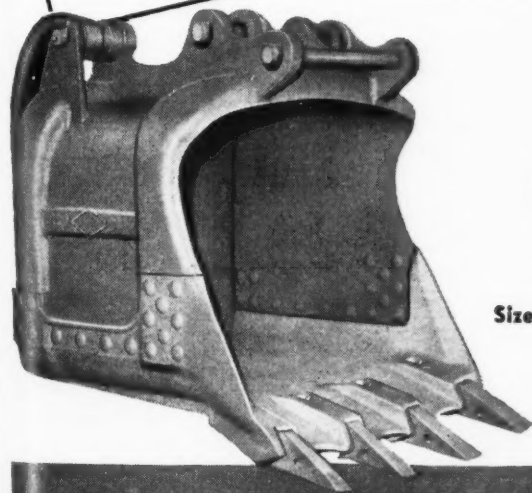
See your shovel man or equipment dealer about PMCO Buckets and Dippers.



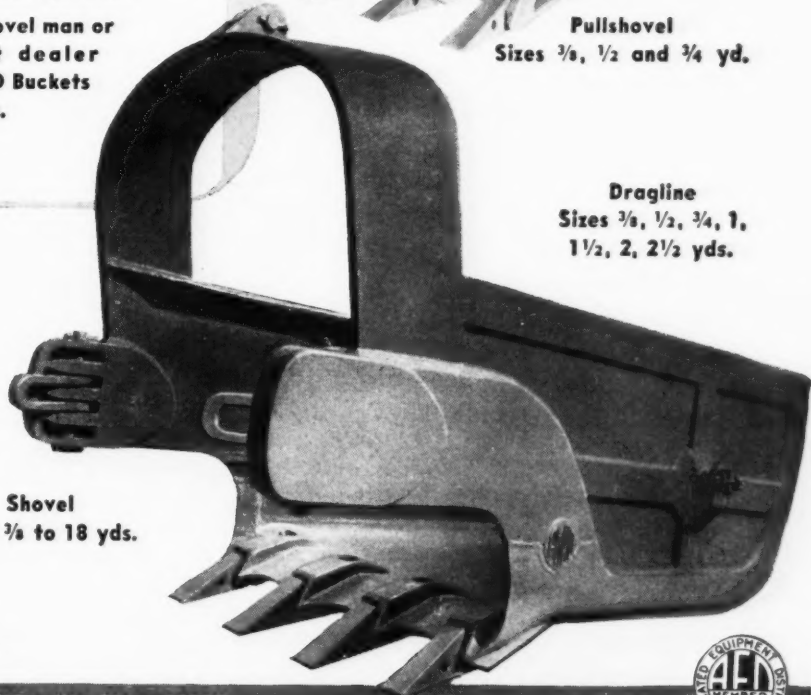
Clamshell
Sizes 3/8, 1/2, 3/4, 1, 1 1/2, 2 yds.



Pullshovel
Sizes 3/8, 1/2 and 3/4 yd.



Shovel
Sizes 3/8 to 18 yds.



Dragline
Sizes 3/8, 1/2, 3/4, 1, 1 1/2, 2, 2 1/2 yds.

"Quality Since 1880"

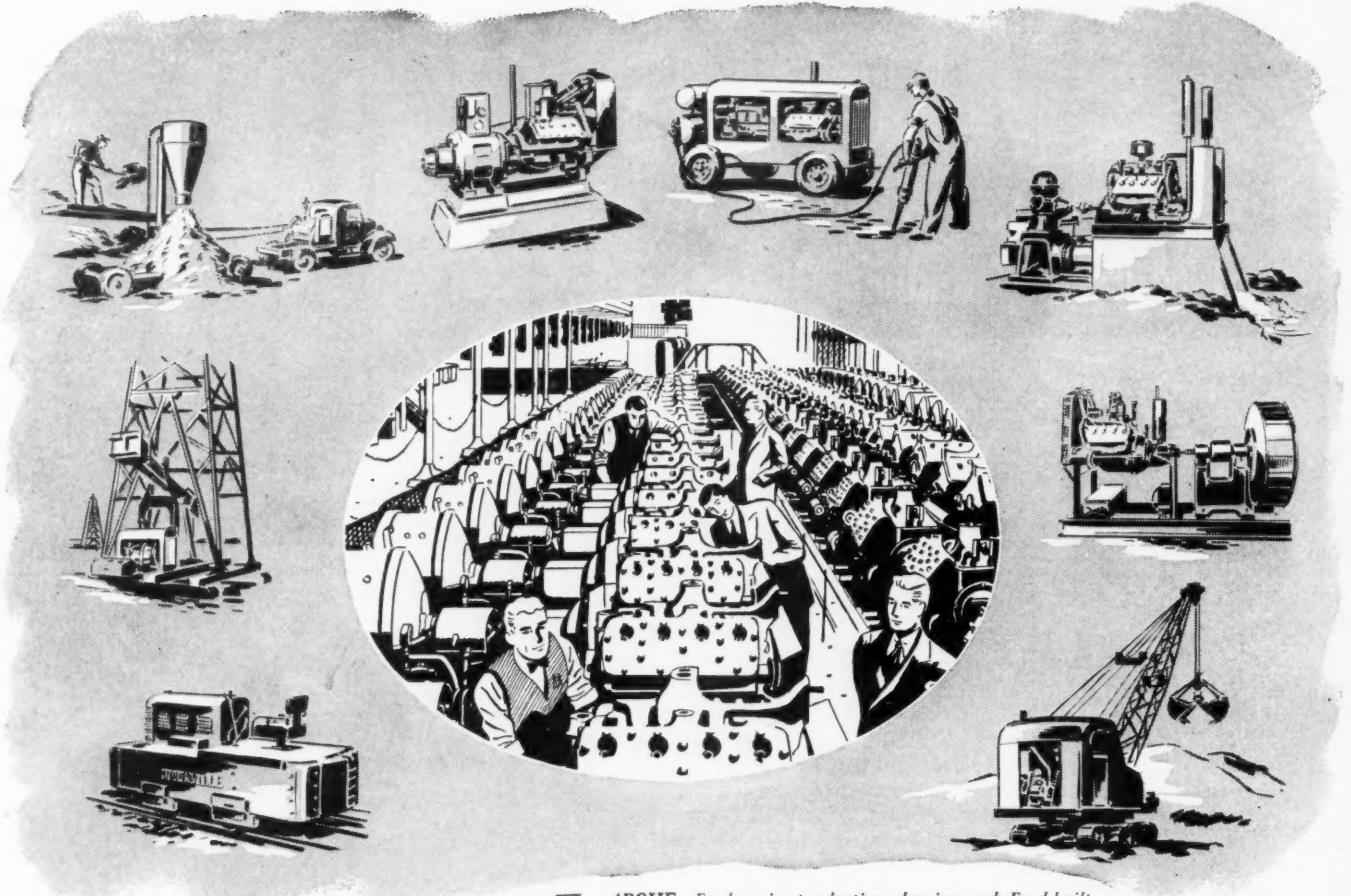
PETTIBONE MULLIKEN CORP.

CHICAGO 51,
U. S. A.

WE OPERATE THE LARGEST AND MOST COMPLETE MANGANESE STEEL FOUNDRY IN THE UNITED STATES.



FORD-BUILT ENGINES



ABOVE—Ford engine production, showing each Ford-built engine being individually block-tested as it comes off the line.

PREFERRED! for the way they're BUILT ... and the way they're SERVICED!

The world-wide demand for Ford-built engines to provide power for industrial equipment is based on very solid values.

Many millions of car and truck owners know, by long personal experience, how excellently Ford engines are engineered, how well they are built, how enduring and reliable and economical they are.

They know, too, that when a man buys Ford-engine-powered machinery, he's assured of authorized Ford Service on the engine almost anywhere he goes. The equipment manufacturer and his distributors, too, are relieved of all concern and expense of maintaining engine parts stocks

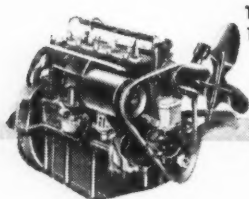
and service facilities. That responsibility is gladly and competently shouldered by Ford Dealers and Parts Distributors.

What finer reasons could there be for the choice of any engine?

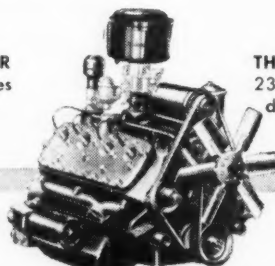
Ford Motor Company has made available to manufacturers and individuals the three popular engines shown below. You can purchase them, singly or in quantity, through any Ford Dealer or from Ford Motor Company. For detailed specifications and dimensional data, write—

FORD MOTOR COMPANY

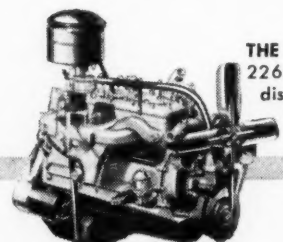
Industrial and Marine Engine Department, No. 60
DEARBORN, MICHIGAN



THE 40-HP FOUR
119.5 cubic inches
displacement.



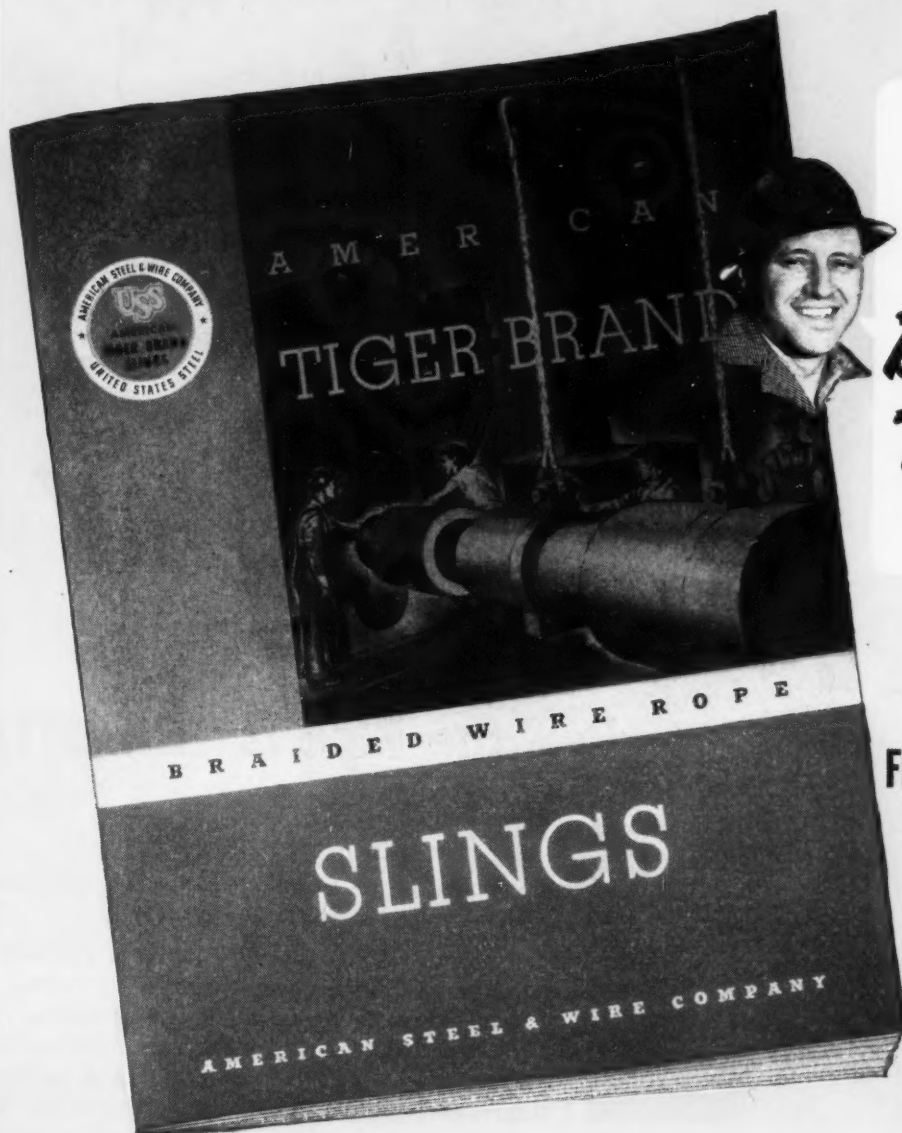
THE 100-HP V-8
239 cubic inches
displacement.



THE 90-HP SIX
226 cubic inches
displacement.

FOR INDUSTRIAL AND MARINE POWER

**IMPORTANT NEW CATALOG ON TIGER
BRAND BRAIDED WIRE ROPE SLINGS**



TELLS WHY
*The BIG
Demand is for
Tiger Brand!*

Send
for your
FREE COPY
It's ready
now!

HERE'S a reliable source book that tells you quickly what you want to know about braided wire rope slings—the safest, strongest kind of sling you can use.

Shows different types . . . gives safe working loads.

It's a useful little book you'll refer to time and time again. Write for your copy today. Address the office nearest you.

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

COLUMBIA STEEL COMPANY

San Francisco

Tennessee Coal, Iron & Railroad Company, Birmingham,
Southern Distributors

United States Steel Export Company, New York

UNITED STATES STEEL

Excellay Preformed





You can **LAY MORE PIPE PER DAY** when the Pipe is **TRANSITE**

The Transite Simplex Coupling is assembled in a simple, speedy operation. Each joint can be checked for proper assembly as the pipe is laid, providing advance assurance that the line will meet final test requirements.



Narrow trenches and minimum disturbance to pavement are important time- and money-saving advantages when laying Transite Pipe under city streets. And note, in the photograph at left, that no bell holes are required at joints.

Even the tough installations go fast when the pipe you're putting in is Transite.

One important reason for this is Transite's Simplex Coupling, the "packaged" joint that's made at the factory and simply *assembled* on the job. No caulking, no hot jointing materials are needed with this coupling. Tight, yet flexible, each joint can be deflected up to 5°—an additional time-saving advantage when laying pipe around curves and in hilly ground.

Easy handling is a factor, too. Transite's light weight means less time and effort required for unloading and lowering into the trench—and more footage carried per truckload.

Every step of the way, your costs are lower with Johns-Manville Transite Pipe! And when the job is done, you can count on Transite's durable, corrosion-resistant, asbestos-cement structure to protect your good name by long dependable service underground. Johns-Manville, 22 East 40th Street, New York 16, New York.



Johns-Manville TRANSITE PRESSURE PIPE

An Asbestos Product

UNION METAL

40 Years of Progress

THIS MONTH Union Metal observes two score years of progressive service in American industrial life. These years have been marked by achievement through fidelity to an original ideal . . . the designing, engineering and production of quality steel products.

This translation of an ideal into tangible, useful products finds . . . tall, graceful poles lighting America's streets, making nighttime travel safer; sportsfield lighting bringing nighttime recreation and pleasure to millions; cargo booms loading and unloading ships speedily and safely; Monotube piles providing sound, dependable foundations for buildings and bridges; fluted architectural columns adding beauty to homes and public buildings; materials handling equipment speeding production in industrial plants . . . each contributing towards higher living and working standards.

Today, Union Metal looks forward confidently to further development . . . and to serving America better.

Street Lighting Standards	Floodlighting Poles
Monotube Tapered Piles	Cargo Booms and Masts
Highway Lighting Poles	Sign Standards
Power Distribution Poles	Hoobler Trailer Undercarriages
Materials Handling Equipment	Architectural Columns

THE UNION METAL MANUFACTURING COMPANY

CANTON 5, OHIO

Craftsmen in Steel Fabrication



You can't pass road mixes across the counter like sugar or salt, but certain unique features of KOTAL MASTER MIXES make it possible to handle them almost as easily as that.

KOTAL MASTER MIXES can be stockpiled ready for delivery in any quantity at any time, regard-

less of season or weather. That's a great convenience and a saving for plant, contractor and customer. Only the KOTAL Process makes this possible.

Let us tell you more about this important scientific development in the art of road building and maintenance. We'll gladly send free booklet to you—also the name of your nearest supplier.



KOTAL COMPANY
360-68 Springfield Ave. ★ Summit, N. J.

KOTAL *Master Mixes*
The Advanced All-Weather Aid in Building Better Roads

BUILT FOR SERVICE

Built to Last



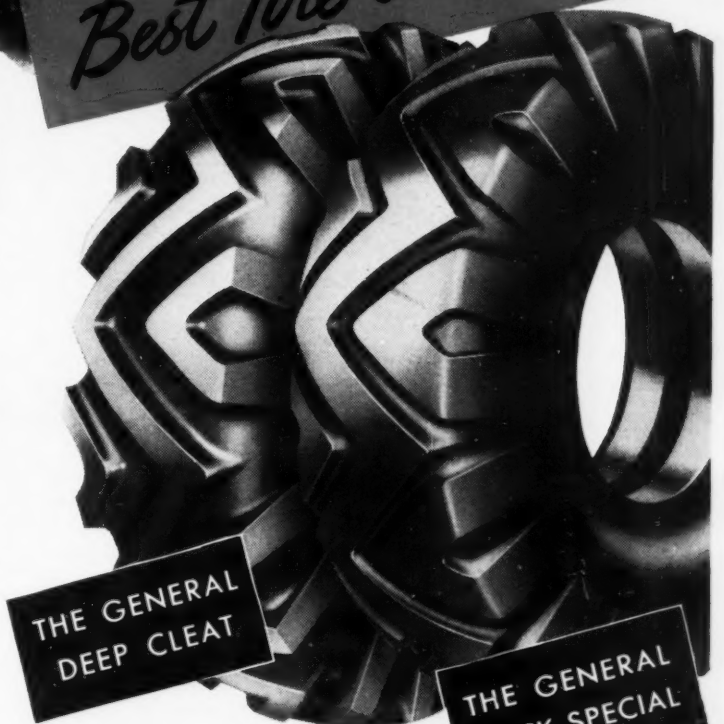
This Adams Motor Grader
is equipped with General Deep Cleet Tires.

Best Tire "on earth"

Yes, General Off-the-road Tires were ALWAYS built for SERVICE. Wartime shortages of natural rubber led to constant research and continuous tests to build a tire comparable to pre-war standards. General's engineers succeeded. They developed "shock-absorber construction" which added life to the tire, made it more rugged, eliminated the common chance of bruises, tears, snags and blowouts.

Now natural rubber is back in greater quantities. More natural rubber plus advances in construction methods worked out in General laboratories mean that General's Off-the-road Tires are as always not only the "best on earth"... they are *better than ever*.

These massive Generals... like all General Tires... are built to top quality. They are the product of skilled craftsmen and *they are built to last*. That is why General Off-the-road Tires... and General Highway Tires as well... are giving the lowest cost performance in tire history.



THE GENERAL TIRE & RUBBER CO.
AKRON, OHIO

GENERAL OFF-THE-ROAD TIRES



How a *Travel Plant*

Gives You Two Advantages

• Low costs per yard and a high quality mix are two advantages enjoyed by the owners of B-G Travel Plants.

The B-G Paving Bucket Loader and Portable Mixer team up to form this high-capacity, portable unit. Its accuracy in proportioning, measuring and mixing means a far better road-mix than is possible with ordinary "on-the-road" units.

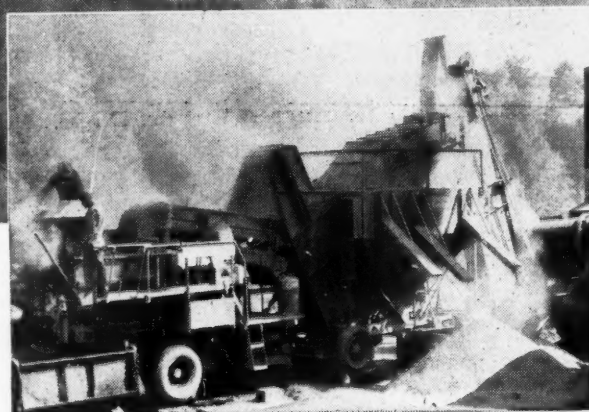
The second important advantage is the fact that with this B-G Travel Plant you can cut your yardage costs through the use of low-cost local materials.

There are many other Barber-Greene constant-flow units for mixing and placing bituminous mix—and for cement and soil stabilization. Like this Barber-Greene Travel Plant they might well help you bid for, and get, more profitable jobs. Write for the Barber-Greene Catalog No. 848 which describes and illustrates B-G asphalt equipment.

Barber-Greene Company, Aurora, Illinois.



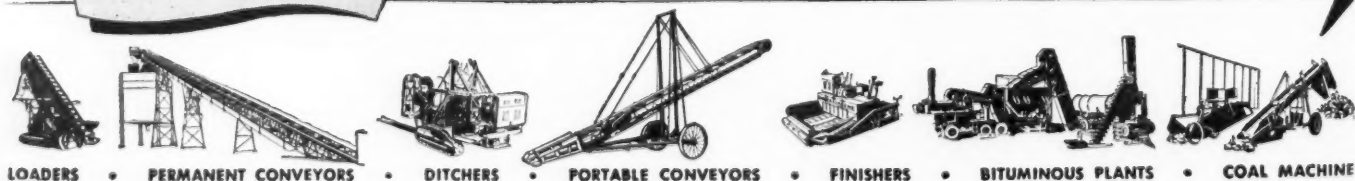
• B-G Mixers serve a dual purpose—as part of the Travel Plant or as an integral unit in a Central Plant set-up shown here. Included is the Gradation Control Unit which accurately proportions aggregate for best quality "high-type" mixes.



46-12



CONSTANT FLOW EQUIPMENT



LOADERS • PERMANENT CONVEYORS • DITCHERS • PORTABLE CONVEYORS • FINISHERS • BITUMINOUS PLANTS • COAL MACHINES



"Revive" Failing Sewers THIS EASY, PERMANENT WAY

Relining failed sewers is easy and quick
—and permanent—with long lengths of
sturdy ARMCO Asbestos-Bonded Pipe.



You can give failing sewers many more years of useful life by relining with durable, easy-to-install ARMCO Asbestos-Bonded Pipe. Job costs are low and the work moves fast. Long lengths of pipe, quickly joined with special inside band couplers, speed the job. Waterway is reduced a minimum because of the relatively thin walls of the corrugated pipe.

Fast as the work goes, you build for *permanence*. Flexible corrugated

metal outlaws breakage. Corrosion is shackled by a full bituminous coating tightly bonded to the base metal. A thick bituminous pavement checks erosive action of sewage; makes the bottom last as long as the top.

Use ARMCO Asbestos-Bonded Sewer Pipe for essential repairs and include it in plans for new sewers. That way you build "for keeps"—provide your community with efficient, lasting, trouble-free sewer-

age. Our 48-page ARMCO Sewer Booklet will help you in your planning. Just write to Armco Drainage & Metal Products, Inc., and Associated Companies, 125 Curtis Street, Middletown, Ohio.



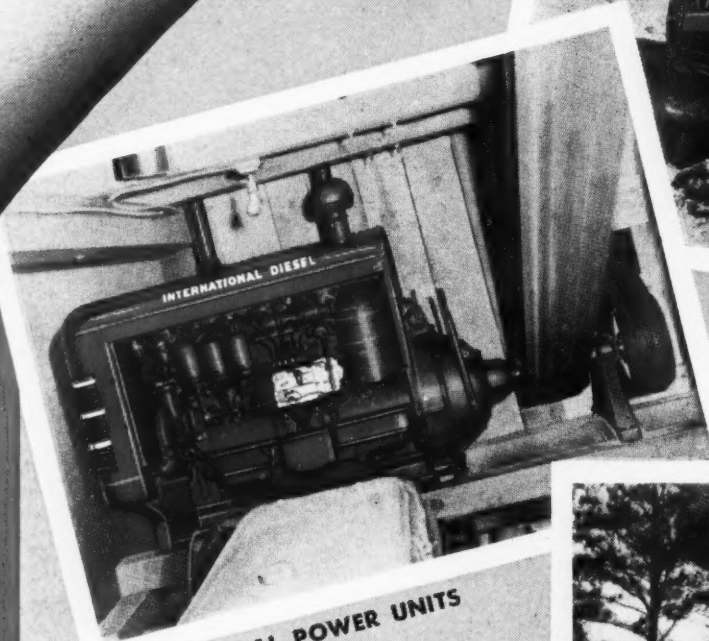
ASBESTOS-BONDED ARMCO SEWER PIPE

GASOLINE AND DIESEL CRAWLER TRACTORS—

This **HH** Symbol Means



INTERNATIONAL CRAWLER TRACTORS

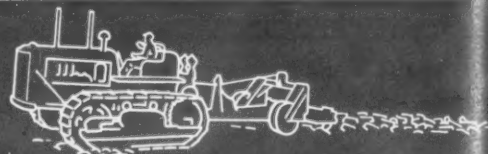
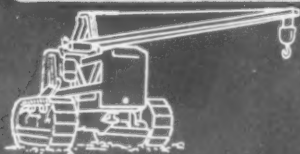
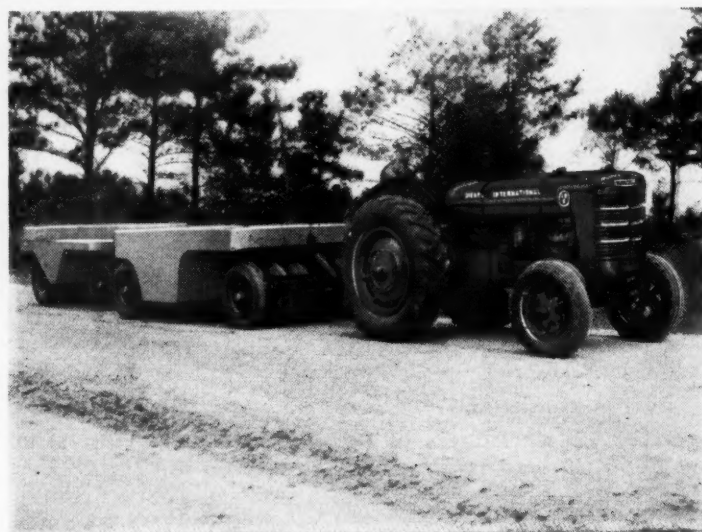


INTERNATIONAL POWER UNITS

The TD-18 Diesel Crawler with bulldozer, clearing and grading a new highway right-of-way in the upper illustration, is one of four International Diesel models currently available. Several additional models will soon be announced.

The UD-18 Diesel Power Unit in the photograph immediately above is the largest of four International Diesel power plants currently available. In addition there are four carbureted models. Several new Diesels will soon be in production.

The ID-9 Diesel Wheel Tractor hauling the wobble-wheel road compactor, at right, is one of two Diesel and four carbureted International industrial wheel tractors currently available through distributors.



INDUSTRIAL WHEEL TRACTORS AND POWER UNITS

Product of **INTERNATIONAL HARVESTER**

This symbol, emblazoned on current models of International Industrial Tractors, Engines and Power Units, is your assurance of dependable products, sold and serviced by soundly financed and reputable distributors—and backed by the reputation, resources and facilities of the International Harvester Company.

It marks the establishments set up to serve you most efficiently. It marks the manufacturing works that produce these outstanding tractors and engines.

And when the *new* crawlers, wheel tractors and power units, soon to be offered, have satisfied all engineering requirements and passed exhaustive field tests, this symbol will be found upon their radiator grilles in bold relief.

Look for this symbol when you buy power for earthmoving and construction equipment. It is your guarantee that the product bearing it meets all the exacting requirements and specifications that make International Industrial Power products outstanding.

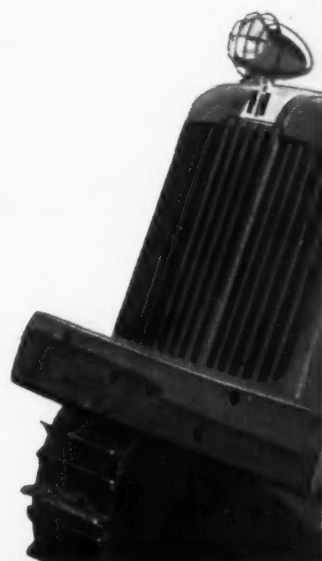
Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue

• Chicago 1, Illinois

INTERNATIONAL *Industrial Power*





"Gulf Quality Lubricants help us get top performance from equipment, fewer mechanical delays"

*says this progressive Contractor**

* Capparell Stripping & Construction Co., Hazleton, Pa., is stripping rock overburden from a large anthracite coal deposit in Luzerne County, Pa. Gulf quality lubricants are helping this contractor keep their big drag lines and Diesel tractors on the job and operating efficiently.

A LARGE SHARE OF THE CREDIT for our rapid progress and low operating costs on this stripping job goes to Gulf quality oils and greases," says this Contractor. "Gulf lubricants help us get top performance from every unit of equipment, fewer mechanical delays, and rock-bottom maintenance costs."

There are three solid reasons why so many leading contractors specify Gulf quality lubricants. One is performance—higher lubricating value and longer life—that insures less wear and smoother operation. Another is the high type of engineering service Gulf provides to insure the right lubricant in the right place. Third, Gulf's prompt delivery service.

You, too, can benefit by using Gulf quality

lubricants on your next contract. Write, wire, or phone your nearest Gulf office today and ask a Gulf Lubrication Engineer to call. He will recommend the proper types and grades exactly suited for your requirements.

GULF OIL CORPORATION • GULF REFINING COMPANY

Division Sales Offices:

Boston • New York • Philadelphia • Pittsburgh • Atlanta
New Orleans • Houston • Louisville • Toledo





Working at an altitude of 6000 feet in a scenic wonderland, S. Birch and Sons, Great Falls, Montana, contractor, is carving four (4) miles of straight-line highway through Bozeman Hill, halfway between Bozeman and Livingston, Montana. The job calls for the moving of 511,886 cubic yards of mountain top, most of which is solid rock. Working as many as three (3) shifts a day, the LIMA 2½ cubic yard heavy-duty shovel, shown in the illustration, averaged 2600 to 3400 yards of rock per shift. This kind of excavating calls for the highest quality equipment. For this reason LIMA got the call. S. Birch and Sons are long-time users of LIMA equipment having purchased their first shovel in 1936. The continuous use of LIMA equipment for 10 years represents a lot of satisfaction. If you have a tough digging job coming up, profit by the experience of successful contractors, make your next shovel, crane or dragline a LIMA.



LIMA LOCOMOTIVE WORKS, INCORPORATED
 Lima, Ohio, U. S. A.
 Shovel and Crane Division
 OFFICES IN PRINCIPAL CITIES

**SHOVELS
 CRANES
 DRAGLINES**

LIMA

A TYPE AND SIZE FOR EVERY MATERIAL HANDLING JOB

ALL THESE JOBS with THIS ONE TOOL!



Breaking Concrete,
Rock, Ice, etc.



Asphalt Cutting



Sheeting Driving



Clay Digging



Spike Driving



Dirt Tamping

Thor

PAVING BREAKERS

More than just a Buster is a Thor Paving Breaker! Withmoil points, chisels, wedges, and broaches in 7 styles it breaks concrete, rock, ice, and other materials. With wide-bladed spades it digs clay and hard-pan; cuts asphalt; splits timbers. With a tamper tool it pounds backfill. With an interchangeable Front Head it drives spikes. With another Head it drives sheeting.

And, whatever the job, Thor Breakers are bonus makers. An exclusive short-travel tubular valve, that gets more work from all the air, controls the extra power to drive a reversible, block-type piston in smooth blows. Rugged construction, full air-cushioning and automatic lubrication reduce wear. Get these benefits on your jobs now—ask your nearby Thor Distributor.

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. Jackson Blvd., Chicago 6, Illinois

Birmingham Boston Buffalo Cleveland Detroit Los Angeles Milwaukee New York Philadelphia
Pittsburgh St. Louis Salt Lake City San Francisco Toronto, Canada London, England

Thor

PORTABLE POWER

TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

AIR PLUS JAEGER COMPRESSOR



P-u-r-r-s like a kitten . . . KICKS like a mule

You've never seen an air compressor as quiet, cool and easy-running as the Jaeger "AIR PLUS." Precision built and balanced, like the fine engines with which they're powered,* these modern compressor units function at far slower piston speed and lower temperatures, produce more air with every pound of fuel and will out-last their original power plants 3-to-1. For **LOWEST COST AIR** (based on reduced fuel consumption, minimum upkeep and far longer compressor life), equip with "AIR PLUS" in any size from 60 to 500 cu. ft.

**Continental, Caterpillar and International engines are standard.*

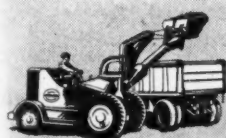
THE JAEGER MACHINE COMPANY, Columbus 16, Ohio

REGIONAL OFFICES: 8 E. 48th St. 226 N. LaSalle St. 235-38 Martin Bldg.
NEW YORK 17, N. Y. CHICAGO 1, ILL. BIRMINGHAM 1, ALA.

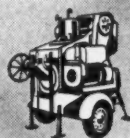
Sold and Serviced in 120 Cities:

Ask your Jaeger distributor to show you these and many other "AIR PLUS" features: 75% to 100% bigger, "ultra-lapped" valves—20% to 30% slower, long-life piston speed (only 800 f.p.m.)—100% positive force-feed lubrication—100% efficient intercooling—30% to 50% larger air receivers—bigger tool boxes, lifetime clutches, sectional radiators, grouped controls, electric starters, Timken-bearing trailer or truck or tractor mounting to meet your needs.

Ask for Catalog JC-5.



"FLEET-FOOT"
Loaders



"SPEEDLINE"
Concrete Mixers



"SURE PRIME"
Contractors Pumps

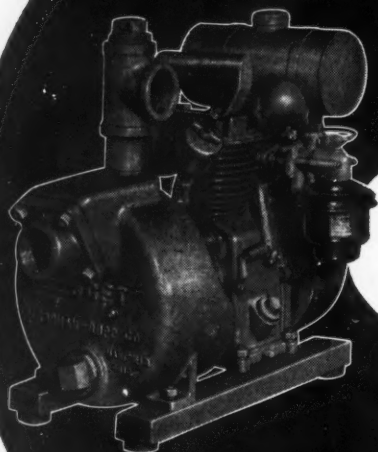
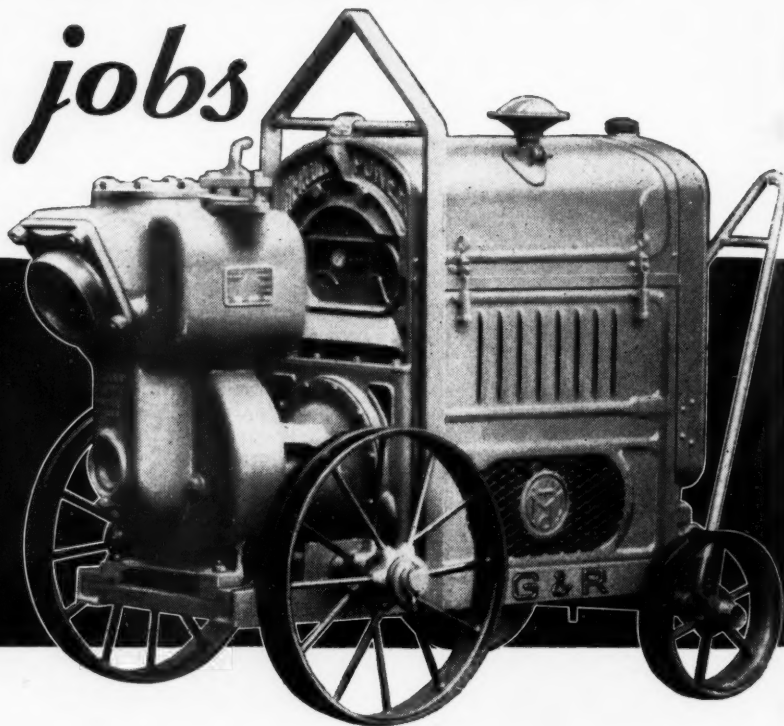
JAEGER

Engineered EQUIPMENT

JAEGER-LAKEWOOD SPREADERS, FINISHERS AND BITUMINOUS PAVERS, FORM TAMPERS—"DUAL-MIX" TRUCK MIXERS, AGITATORS—JAEGER HOISTING ENGINES, TOWERS

TOUGH *pumps* *that will handle the* **TOUGH** *jobs*

Gorman-Rupp Heavy Duty Pumps are big, tough and dependable. The Pump pictured here is the Model 1602 (90M), capacity 15,000 GPM at average total head.



The Midget - 3,000 Gallons per hour at 20 ft. total head. 5 ft. suction lift; length 18½ inches, width 9¼ inches, weight 60 pounds.

Pumps and other equipment used on construction work must take a lot of punishment. Gorman-Rupp centrifugal pumps can help you complete your contracts on time and at a greater profit. They will stay on the job day in and day out for months at a time if necessary with no costly loss of time for repairs.

Gorman-Rupp self-priming centrifugal pumps are by far the simplest pumps made and are streamlined inside where streamlining counts. They will handle any muck, weeds or gravel that will pass the intake strainer. Every part of a Gorman-Rupp pump has long wear built into it and every wearing part is easily and quickly replaced with common tools.

There is a Gorman-Rupp pump as small and handy as a bag of tools, capable of delivering 3000 G. P. H. and there are other pumps with capacities up to 125,000 G. P. H.

Gorman-Rupp pumps will out-live and out-perform any other comparable equipment.

Write for further detailed information
or call your nearest distributor.

THE



GORMAN-RUPP COMPANY

308 BOWMAN STREET • MANSFIELD, OHIO

Steelply REINFORCED CONVEYOR BELTING

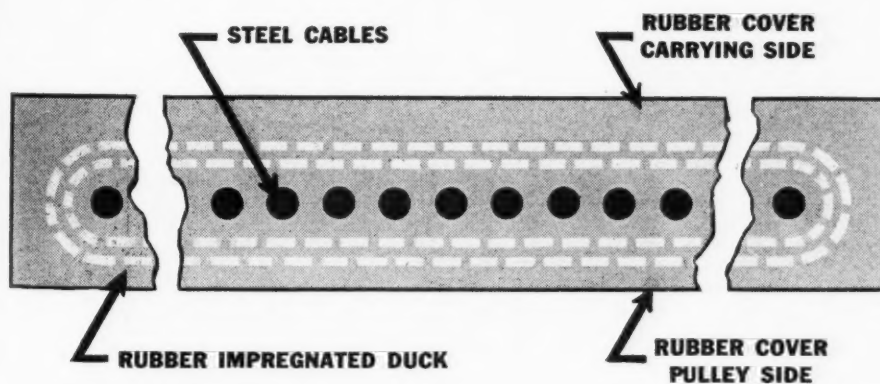
6 times the Haul...
6 times the Lift...



The Strength of Steel

PLUS

The Resilience of Rubber



A NEW ERA is here in material handling. Belt-conveyors and belt-elevators now can be designed using Roebbling "Steelply" reinforcement, to a tension-constant which removes practically all limitations as to weight of haulage and height of lift.

"Steelply" reinforced Conveyor Belting is several times stronger than belting of conventional design. The hauling distance and the lift can be increased about six times that of ordinary belts, depending, of course, upon the arc of contact and coefficient of friction attainable at the driver pulley . . . But "Steelply" cables can "take it".

An extremely flexible belt, its longitudinal stiffness is exactly enough to prevent undue sagging between idlers; its lateral flexibility insures perfect troughing.

Get the full story on this revolutionary new belt. Ask your supplier about "Steelply" reinforced Conveyor Belting.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY

Branches and Warehouses in Principal Cities



ROEBLING

PACEMAKER IN WIRE PRODUCTS



Joe can really "chute the works" with that new Rex!

And no wonder! For the new Rex Mixer is designed to allow any operator to turn out more batches per day . . . with far less manual effort!

Take, for example, the discharge chute. It's outside the drum during mixing and when it's time to discharge, the operator just gives an easy-operating hand lever a push and swings the chute into the drum. Contrast this with the ordinary chute that's inside the drum during

the mixing. The operator not only has to lift the chute but a chute-full of concrete as well when the batch is ready to discharge. Think of the extra wear and tear on that chute in addition to the strain on the operator.

For all the facts, see them at your Rex Distributor, or if you prefer, send for your free copy of Catalog No. 480. Address Chain Belt Company, 1664 W. Bruce St., Milwaukee 4, Wis.



CHAIN BELT COMPANY of MILWAUKEE

CONSTRUCTION MACHINERY



PUMPS



PAVERS



PUMPCRETES



MOTO-MIXERS



MIXERS

How to make your small tractors

earn more money



... Keep 'em working more often on more jobs with **C Carrimor* Scrapers**

● Here are two of the greatest little scrapers you've ever seen for ditching and shoulder work . . . digging stock ponds . . . filling in around culverts and bridge abutments and for all other kinds of light excavation, stripping, grading and hauling. Choice of 2- or 4-yard capacity for use with small crawler-type or high-speed, rubber-tired industrial tractors. Thrifty to buy. Easy to operate and maintain. Job-proved by extensive war-time use. Write today for complete facts, LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa; Oakland, Calif.

LOOK WHAT YOU CAN DO!

● Here's a reasonable estimate of the number of yards moved per hour by LaPlant-Choate C-22 and C-42 scrapers behind high speed rubber-tired tractors of 22-28 DHP and 40-50 DHP respectively. Yardage is based on self-loading in good scraper material, with properly maintained haul roads.

Model	LENGTH OF HAUL IN FEET								Load, Turn and Dump Time	Pay Yards Per Trip
	200'	300'	400'	500'	600'	800'	1000'	2000'		
C-22	38	32	29	26	24	22	21	17	1.5 Min.	1.75
C-42	69	59	55	52	50	46	44	32	1.75 Min.	3.75

*Pat. U.S. Pat.-C.H.

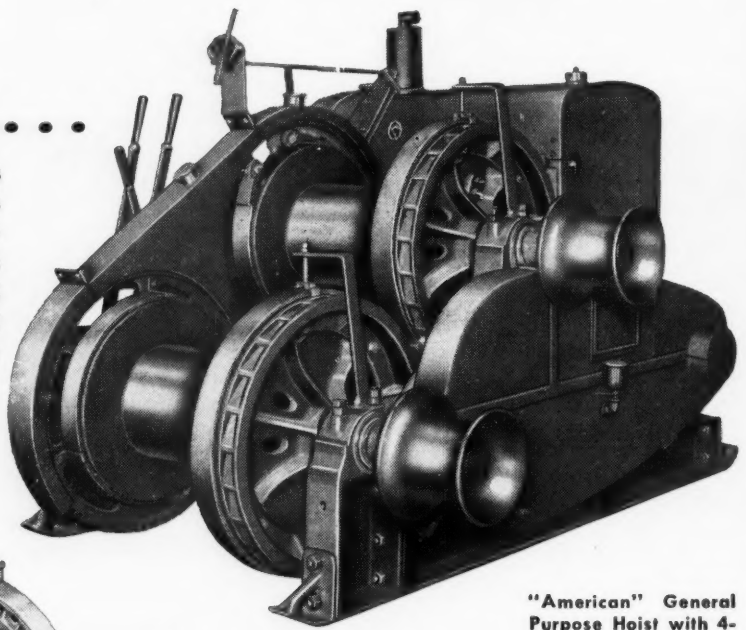
LaPLANT - CHOATE

Job-Proved Equipment...

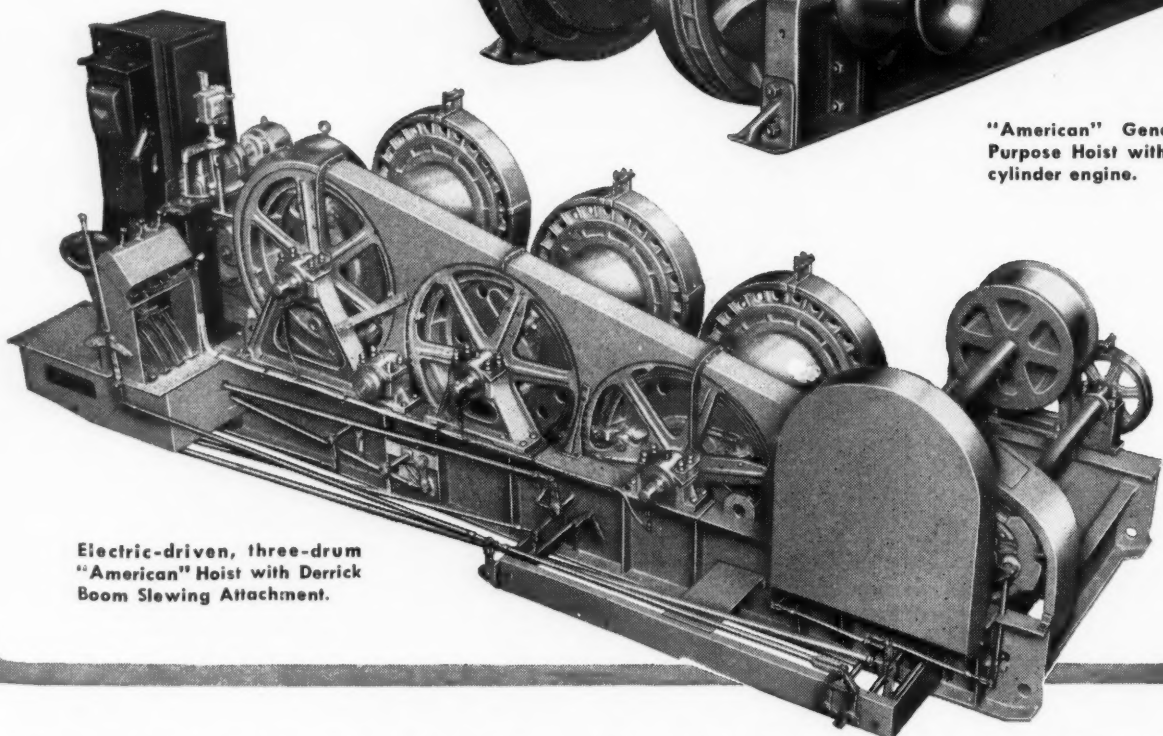
for Lowest Possible Cost in Moving Earth

"AMERICAN" OFFERS a Wide Range of Hoist Sizes . . .

"American" General Purpose Hoists are available in 1 to 5-ton capacities through reputable distributors everywhere. Larger "American" Hoists—up to 20-ton capacities—are equipped with air controls and contracting band frictions and are "waterfalled." Each is adapted to your requirements.



"American" General Purpose Hoist with 4-cylinder engine.



Electric-driven, three-drum "American" Hoist with Derrick Boom Slewing Attachment.

...AND A WIDE VARIETY OF BLOCKS, SHEAVES AND HOOKS



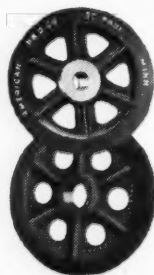
Eight-sheave block with special hanger.



Typical diamond shell block with swivel hook.



Easily unlocked oval shell snatch block.



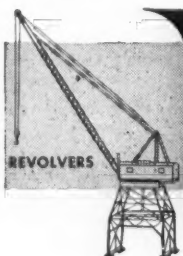
Self-lubricating bronze, plain bronze or anti-friction bearing sheaves.



Shackles and hooks are forged and generously proportioned.



"American" is a leading and constantly expanding source of supply for these items to both manufacturers and users of materials-handling equipment. Various types, sizes and capacities of wire rope blocks and sheaves can be readily supplied.



AMERICAN HOIST & DERRICK CO.

St. Paul 1, Minnesota

CHICAGO · SAN FRANCISCO · NEW YORK



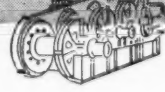
LOCOMOTIVE CRANES
BLOCKS AND SHEAVES

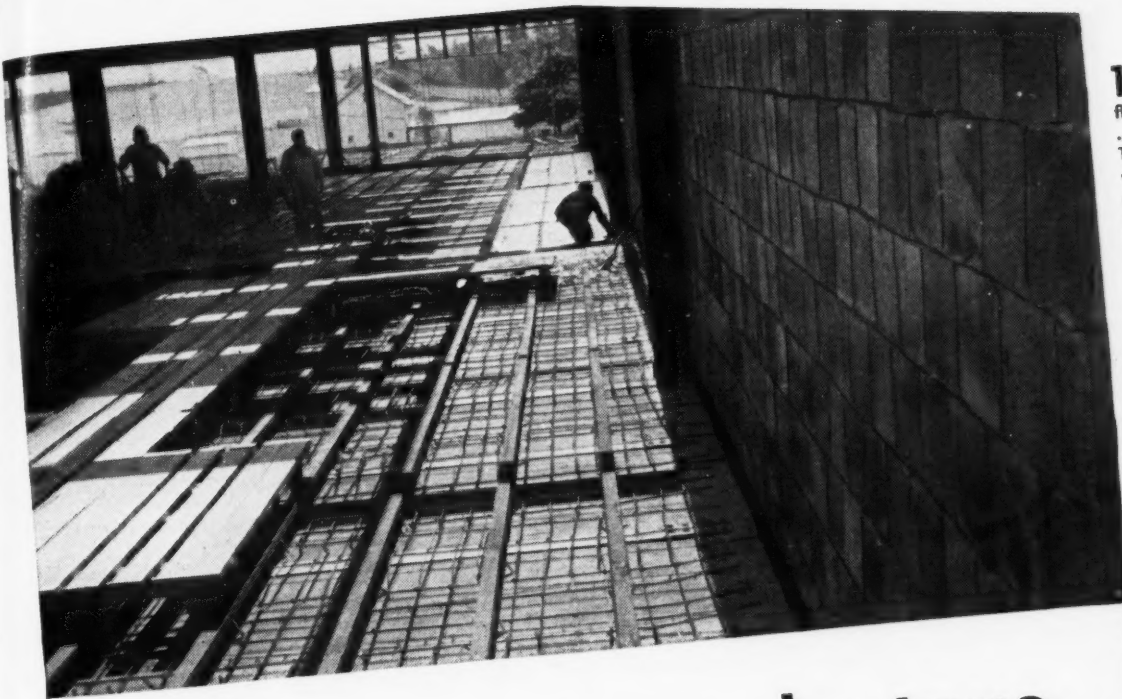


HOISTS



DERRICKS
CROSBY CLIPS

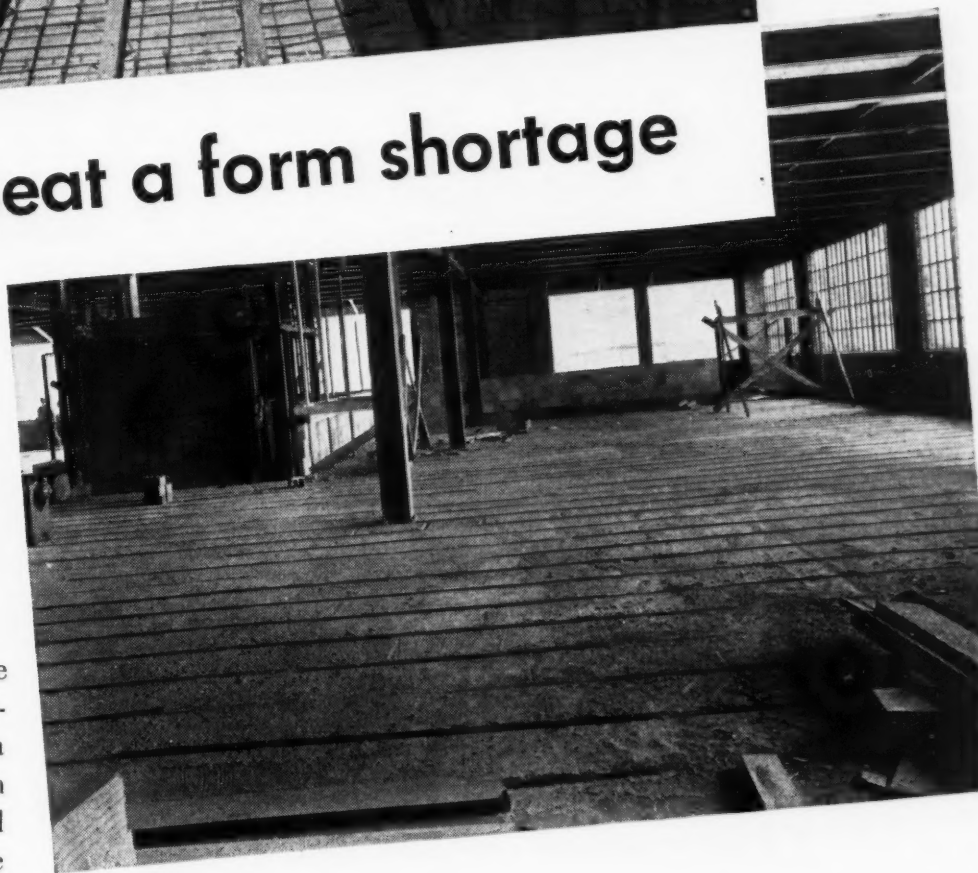




1. Pouring the second floor of a new building . . . for the Bridgewater Textile Corporation, a wholly-owned subsidiary of the Celanese Corporation of America at Bridgewater, Va.

2. Contractor: The George F. Hazelwood Co., Cumberland, Md. Owners: Bridgewater Textile Corporation. Field Resident Engineer: Mr. Benjamin A. Morgan, Jr.

How to beat a form shortage



Here's how the Celanese Corporation of America and their contractor beat a form shortage, and avoided an expensive delay. Plans called for a reinforced concrete second floor . . . and only 25% of the needed forms were obtainable. But they were resourceful. Using Lehigh Early Strength Cement, they found they could strip the forms in less than a quarter of the normal time, thus maintaining the schedule . . . and saving the costs of 44 additional days they otherwise would

have required.

Such results are possible with Lehigh Early Strength Cement. When you need service strength in a hurry, use this 3-to-5-times-faster-curing cement. Our Service Department will be glad to discuss details with you.



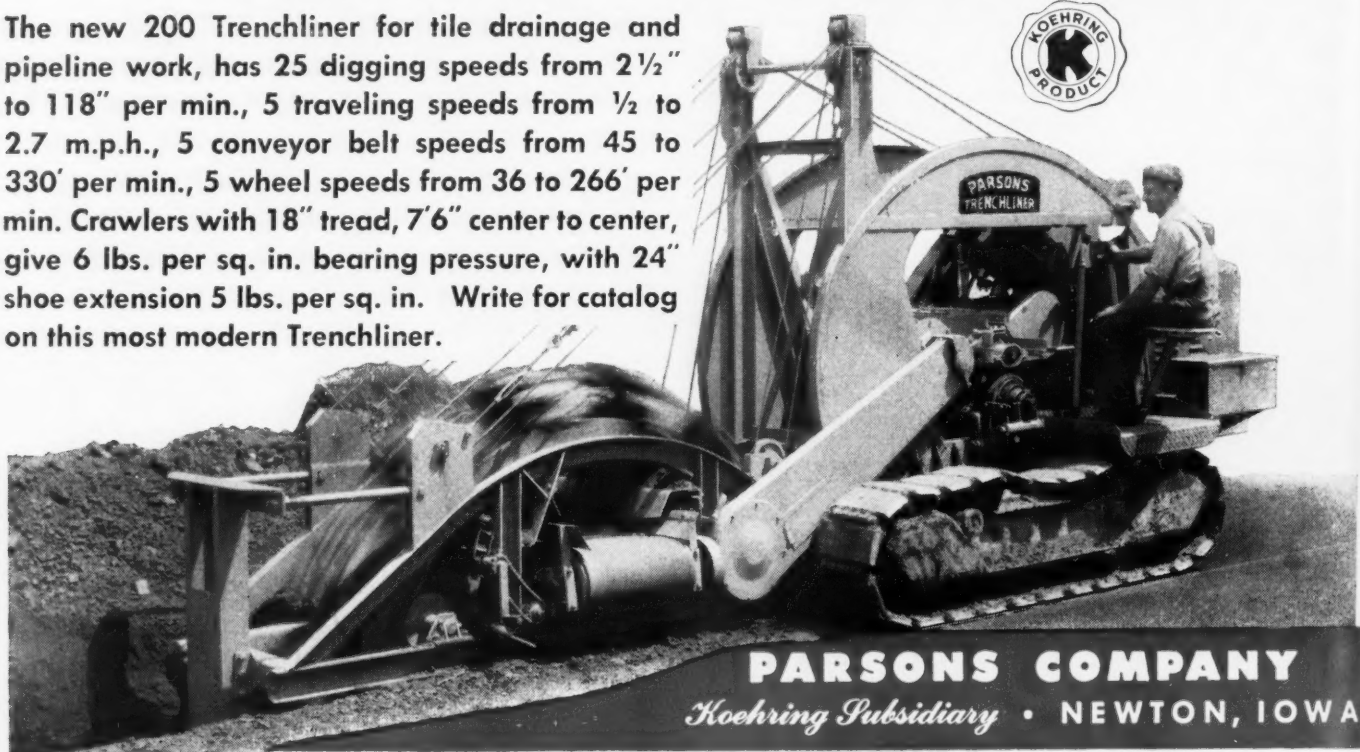
LEHIGH EARLY STRENGTH CEMENT • LEHIGH NORMAL CEMENT
LEHIGH AIR-ENTRAINING CEMENT • LEHIGH MORTAR CEMENT
LEHIGH PORTLAND CEMENT COMPANY

• ALLENTOWN, PA.
• CHICAGO, ILL.
• SPOKANE, WASH.

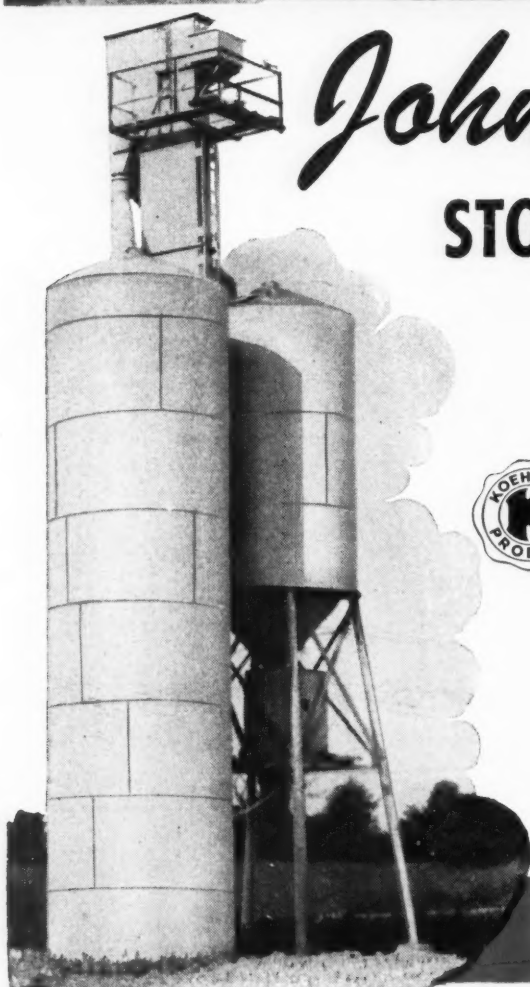
Parsons 200 TRENCHLINER

digs 15" to 26" wide, up to 5' 6" deep

The new 200 Trenchliner for tile drainage and pipeline work, has 25 digging speeds from 2½" to 118" per min., 5 traveling speeds from ½ to 2.7 m.p.h., 5 conveyor belt speeds from 45 to 330' per min., 5 wheel speeds from 36 to 266' per min. Crawlers with 18" tread, 7'6" center to center, give 6 lbs. per sq. in. bearing pressure, with 24" shoe extension 5 lbs. per sq. in. Write for catalog on this most modern Trenchliner.



PARSONS COMPANY
Koehring Subsidiary • NEWTON, IOWA



Johnson PORTABLE TWIN SILO STORES 1,550 BARRELS CEMENT

The largest of the Johnson Twin Silo Bulk Cement Plants stores 1556 barrels of cement. Smaller Johnson Twin Silo Bulk Cement Plants store 708, 990, 1274 barrels. Yet, their large storage capacity does not limit their portability. Disassembled units easily fit flat cars or flat bed trucks. Initial cost of the unit is low, with operating costs at a minimum.

Other Johnson Bulk Cement Plants include the Portable Section Unit (storage capacities: 280 to 500 bbls.), the Dutchmill (storage capacities: 50 to 150 bbls.) and the Elevating Charger, an unloading transfer and batching plant.



THE C. S. JOHNSON COMPANY
Koehring Subsidiary CHAMPAIGN, ILLINOIS



More Yards **MOVED PER H.P.**

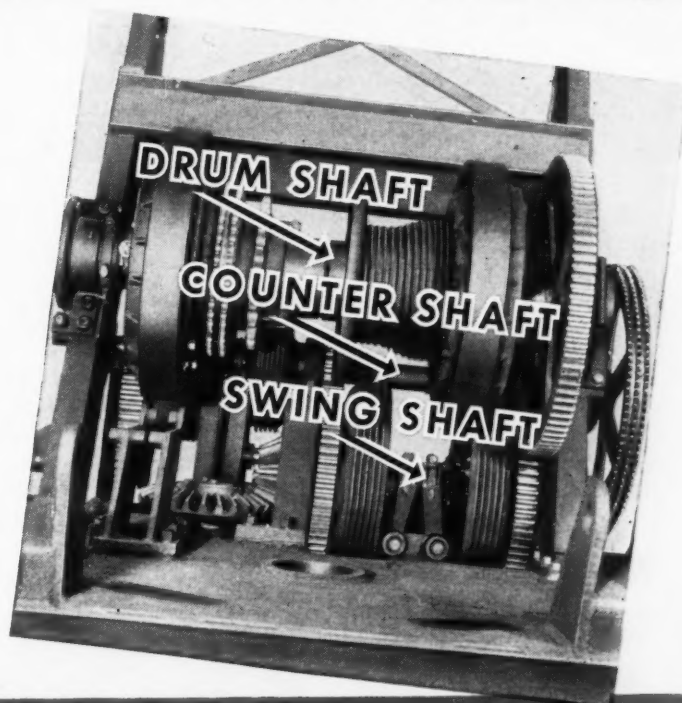
because every Main Shaft rolls on Anti-Friction bearings

On the Koehring 205 engine horse power rides to work in style, on anti-friction bearings. All major shafts—drum shaft, counter shaft and swing shaft—are mounted on ball bearings. Because there's little friction to waste engine horse power, greater digging force gets to the business end. Power saved pays off in extra yardage. Lubricating time is reduced, because bearings are sealed tight to hold lubricant, to lock out dirt and moisture.

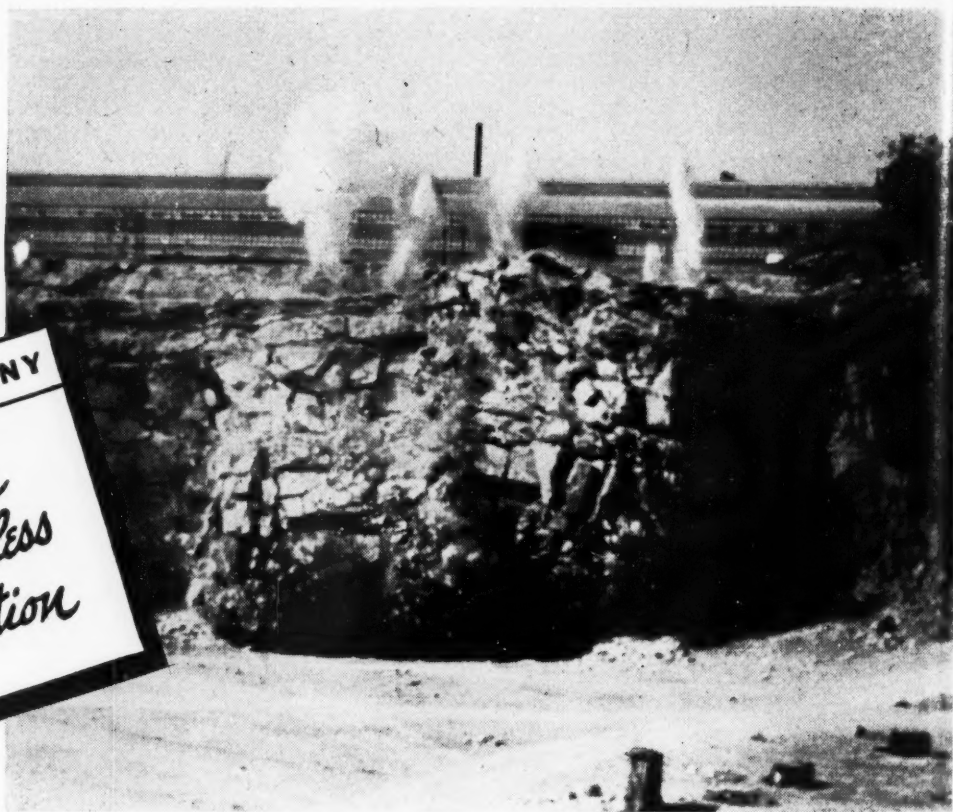
KOEHRING COMPANY
MILWAUKEE 10, WISCONSIN

Subsidiaries

JOHNSON • KWIK-MIX • PARSONS



HEAVY-DUTY CONSTRUCTION EQUIPMENT



The **ROCKMASTER** Blast Prescription is Compounded Especially for Your Job

What is Rockmaster? It's a sensational new blasting system that enables you to time the delay elements of your shot in thousandths of a second—giving you a new degree of timing control never before possible.

More important, Rockmaster is a system that's *especially "compounded" to fit each job*. Drilling, spacing, type of explosives and timing of detonation are carefully selected to get the most from each shot. Explosives do more work on the rock, and less energy is expended in the air.

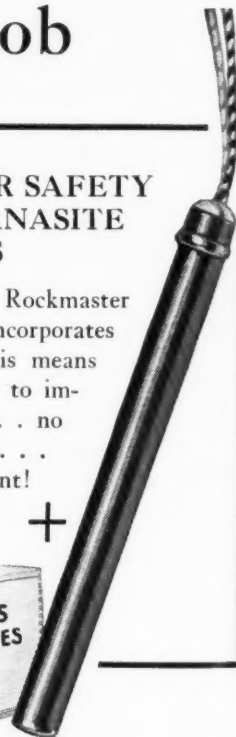
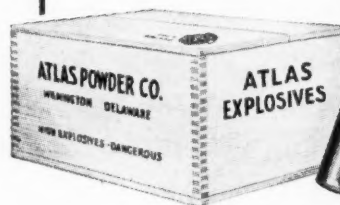
That's why your Atlas representative can refer you to users who have increased rock fragmentation by as much as 30% with Rockmaster. That's why, too, in many cases, Rockmaster has totally eliminated complaints about noise and vibration—even when more holes have been fired than formerly.

Frankly, the Rockmaster System is not the answer to every blasting problem. But with our knowledge of explosives and your knowledge of the job, the chances are that it will work for you. If so—you'll actually have to *see* the results to believe them possible! Call in the Atlas representative.

ROCKMASTER: Trade Mark

THE GREATER SAFETY OF ATLAS MANASITE DETONATORS

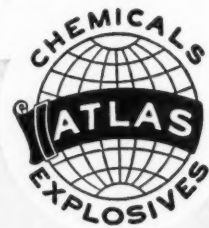
Remember, the Atlas Rockmaster Blasting System also incorporates Atlas Manasite. This means decreased sensitivity to impact and friction . . . no sacrifice of economy . . . less chance of accident!



ATLAS

EXPLOSIVES

"Everything for Blasting"



ATLAS POWDER COMPANY, Wilmington 99, Del. • Offices in principal cities • Cable Address—Atpowco

Their Performance Speaks Louder Than Words



Above — A Homelite Generator on the job furnishes plenty of power to operate time-saving electric saws.

Below — A Homelite Pump and Generator make the right combination for speeding dewatering jobs at night.



We'd much rather show you Homelite Portable Gasoline-Engine-Driven Pumps and Generators *in action* than just talk about them. Action speaks louder than words.

So why not let us give you a free demonstration...any place you want it. See how fast a Homelite pumps, how quickly it primes itself, how easily it handles heavy liquids and solids. See all the cost-cutting operations you can put to good use on day or night work with steady electric power furnished by a handy Homelite Generator.

To get such a demonstration, free from all obligations, simply write. We'll have our nearest representative get in touch with you.

Homelite
CORPORATION
Port Chester, New York
**Portable Pumps
Generators and
Blowers**
GASOLINE-ENGINE-DRIVEN

**YOUR
RUNNER WILL**

LOOK

**THE
EASY-TO-HANDLE
DRIVING POWER**

**OF
SULLIVAN
K-81 PAVING
BREAKERS**

**WITH
EXCLUSIVE
DUAL
VALVE**

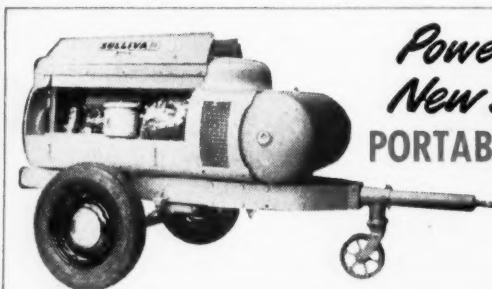


**Makes Air
do
More Work**

A profit-maker for

- DEMOLITION WORK
- CONCRETE BREAKING
- SPIKE DRIVING
- FORM STAKES
- SHEET PILING
- CAR TAMPING

*Consult a
Joy Engineer*



*Power is packed in the
New Sullivan Series 80*
PORTABLE AIR COMPRESSORS

Delivers 105 to 365 C.F.M.
free air at less cost with
"Econo-Miser" load control.

SULLIVAN DIVISION

JOY MANUFACTURING CO.

GENERAL OFFICES: HENRY W. OLIVER BUILDING • PITTSBURGH, PA.

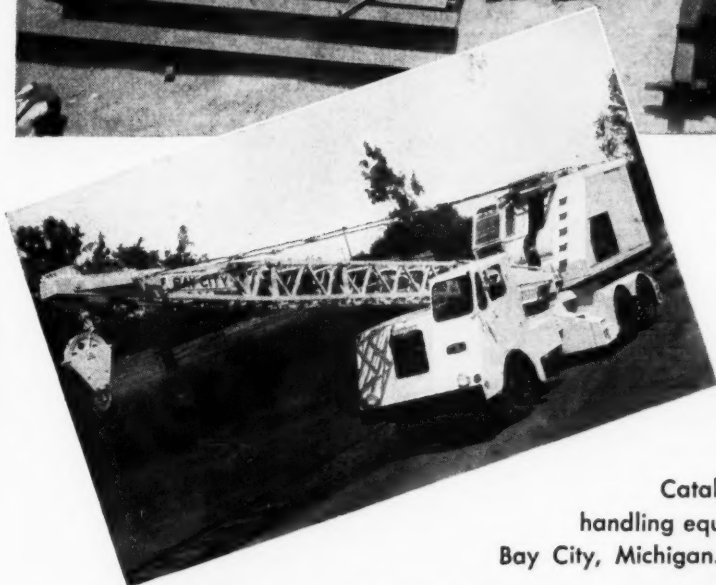
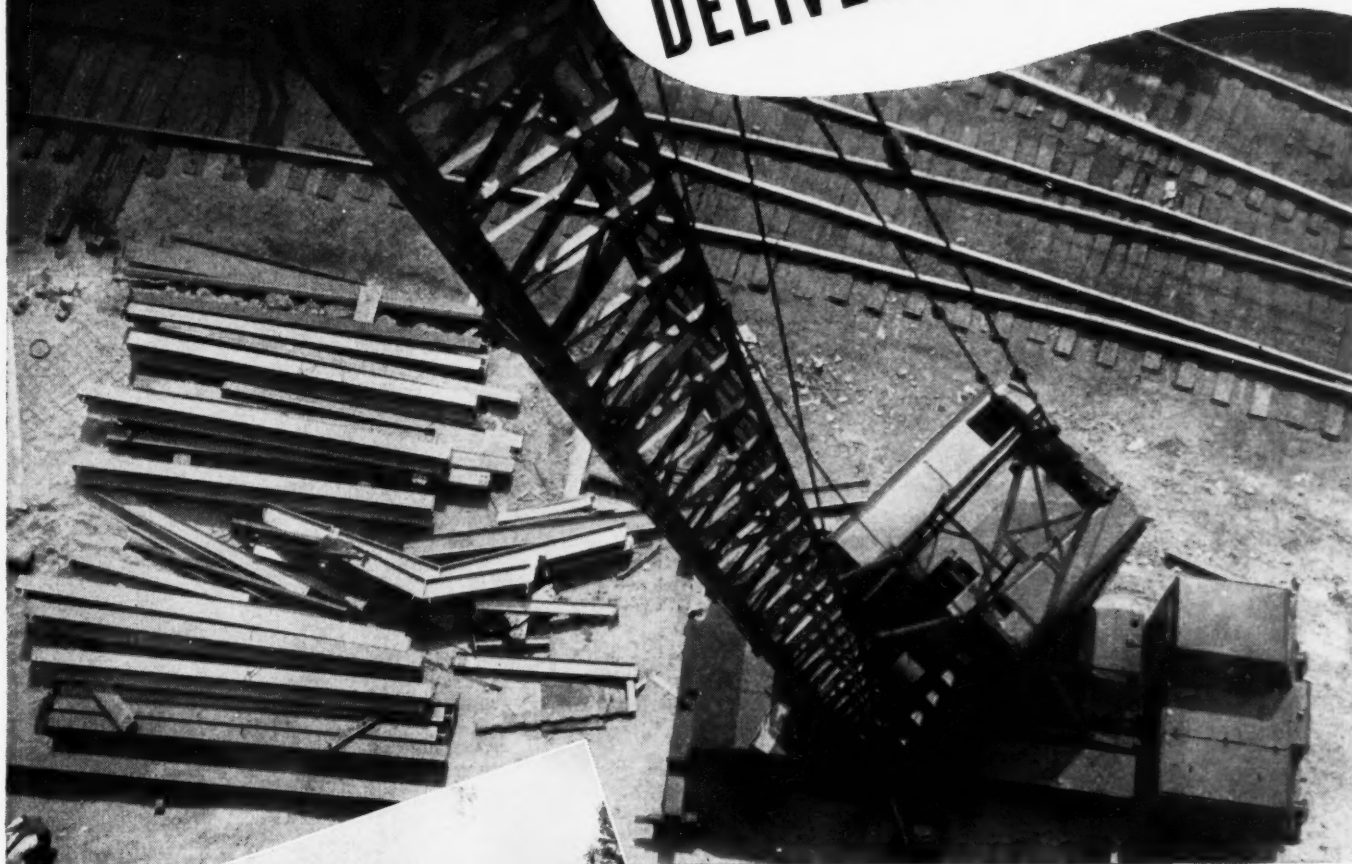
*Write
for
Bulletins*

W&L Corp.



"from where I stand it's easy
to see why

**BAY CITY
DELIVERS THE GOODS!"**

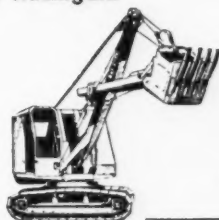


Photograph at top shows a 20-ton capacity CraneMobile operated by Kenwood Erection Company of Chicago.

"Man! It's almost play, workin' up here while Joe downstairs in the CraneMobile swings the steel up. For me, the man on top, it's simple the way Joe hoists 'em high, wide and easy—practically into my mitts with the precision boom control. He says the way that CraneMobile handles makes his job a cinch. No matter where I work up here the CraneMobile gets the steel up and in place. And the boss says he never saw steel go up as fast as this has since we got that BAY CITY."

Catalogs on this and other BAY CITY excavating and material handling equipment available on request. Write BAY CITY Shovels, Inc., Bay City, Michigan.

BAY CITY



SHOVELS • DRAGLINES
CRANES • HOES • CLAMSHELLS

SEE YOUR NEAREST DEALER for Bay City excavating and material handling equipment in sizes from $\frac{3}{8}$ to $1\frac{1}{4}$ yards having crane rating up to 20 tons. Both crawler and pneumatic tire mounting.



Modern baking Company fleet finds relief from sludge trouble



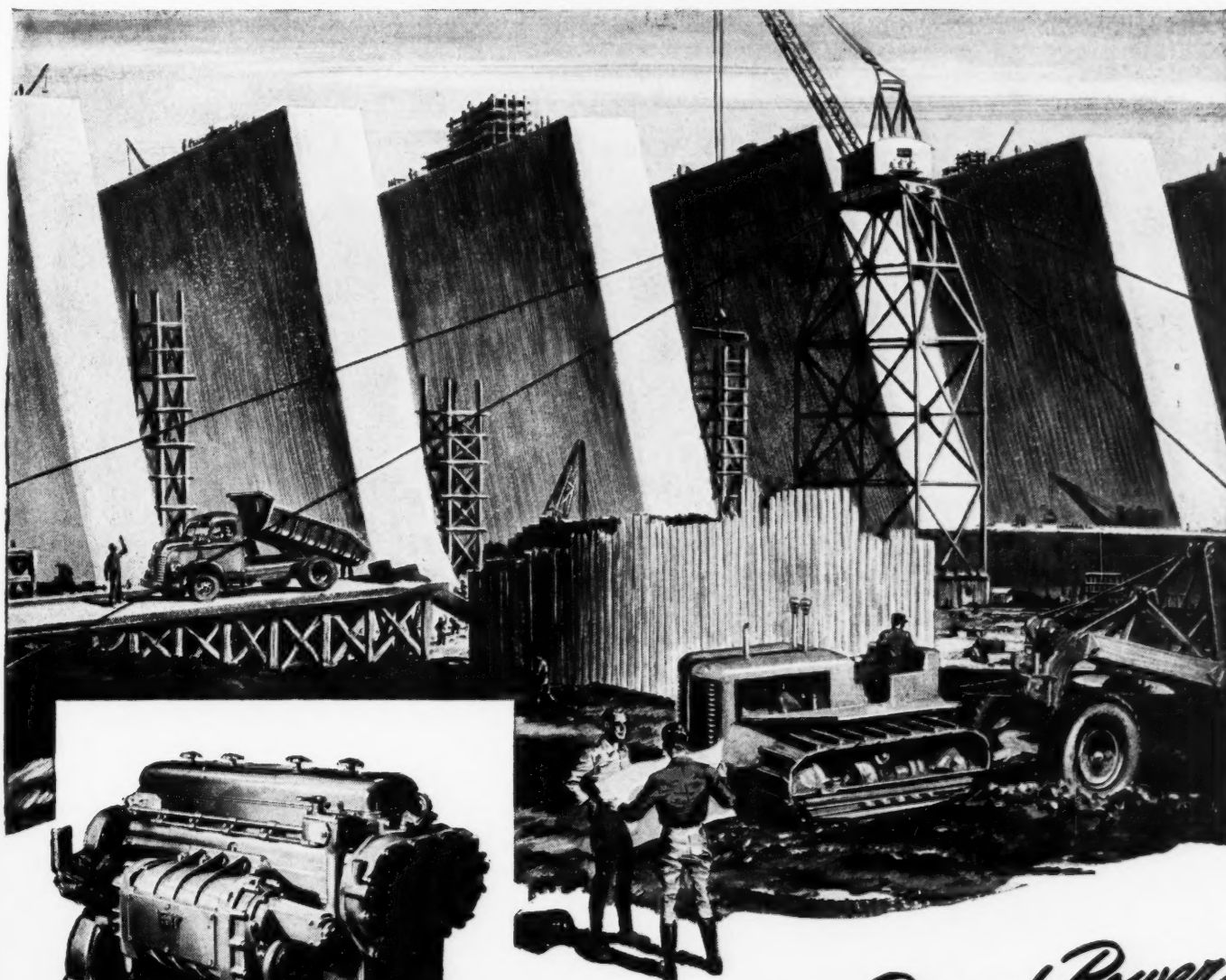
"After operating this fleet on Stanolube HD, overhaul periods were reduced, clogging of screens disappeared, engines stayed clean with positively no ring sticking." That's the engineer's final report after working with the fleet maintenance men of the Heiss Baking Company to clear up sludge and varnish trouble that had plagued this fleet for some time.

Along with changing to Stanolube HD

this fleet also adopted Streamlined P.M.—Standard Oil's simplified preventive maintenance plan. As was proved in this fleet, Stanolube HD and Streamlined P.M. are an unbeatable combination for reducing fleet maintenance. Your Standard Oil Automotive Engineer can tell you about both. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois, for the Engineer nearest you.

STANDARD OIL COMPANY (INDIANA)

**STANDARD
SERVICE**



For Great Diesel Power —check what's going on in construction

MODERN construction projects grow on volumes of power. It has to be dependable, hard-hitting, low-cost power.

And what do you find providing that kind of power throughout the industry? General Motors series 71 Diesel engines. You find them in trucks and tractors, in welders and trenchers, in earth movers, graders, compressors, pumps and what-not.

Because these Diesels are compact as well as powerful. They're lower in weight

as well as husky. They're easy to start and they stay on the job.

These are qualities that bring Diesel power advantages to operators who couldn't consider it before.

So whatever needs for power you may have in road-making machinery, crushers, shovels or any other construction equipment—look to GM Diesels.

DETROIT DIESEL ENGINE DIVISION

DETROIT 23, MICH. • SINGLE ENGINES . . . Up to 200 H.P.
MULTIPLE UNITS . . . Up to 800 H.P.
GENERAL MOTORS



Features of GM Diesels Important to Every User of Power

QUICK TO START—on their own fuel

LOW COST—run on common fuel oil

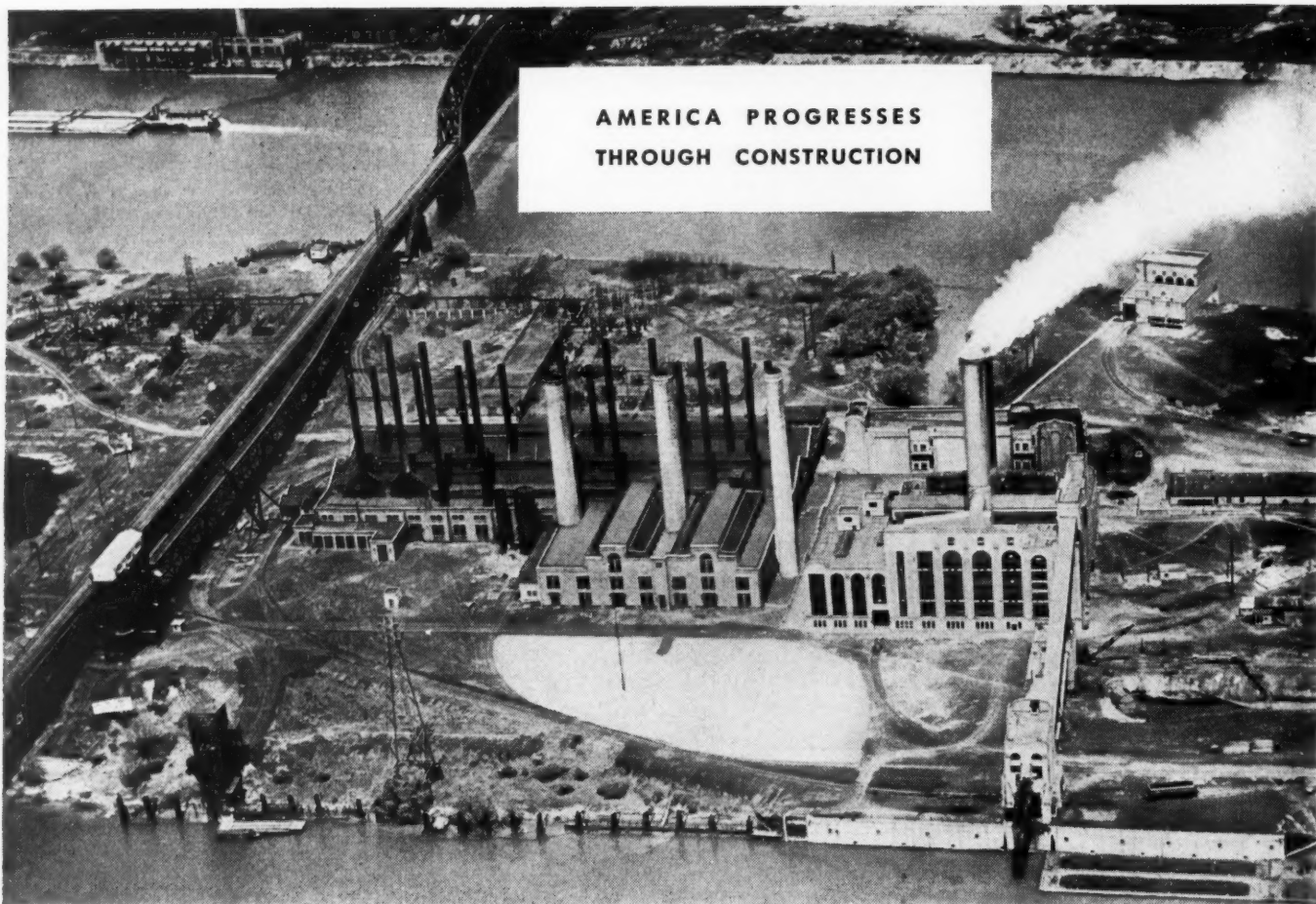
EASY TO MAINTAIN—clean design plus accessibility

LESS FIRE HAZARD—no volatile explosive fuel

COMPACT—readily adaptable to any installation

SMOOTH OPERATION—rotating and reciprocating forces completely balanced

QUICK ACCELERATION—2-cycle principle produces power with every downward piston stroke



AMERICA PROGRESSES
THROUGH CONSTRUCTION

NEW POWER PLANTS GENERATE NEW PROSPERITY

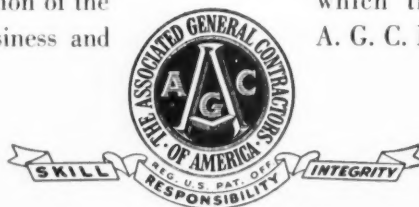
THE industrial expansion of America is geared to the generation and transmission of electricity. Billions of additional kilowatt hours of electric energy will be needed if industry is to reach its future production goals.

It is estimated that the electrical power industry will expend between two and three billion dollars in new construction in the next three years. This expansion should provide electrical service to an additional 4,000,000 customers.

For complete future utilization of the electricity as an efficient business and

social force—at home—in offices—in stores—in factories—more and more power plants will be required. These new units, both large and small, must be strategically located and constructed to yield the greatest possible savings in operating and maintenance costs.

These results can be most economically attained by relying on the skill, responsibility and integrity of A. G. C. General Contractors, because of the sound business principles to which they are pledged under this A. G. C. Emblem.



This advertisement is No. 8 of this series

THE ASSOCIATED GENERAL CONTRACTORS of AMERICA, INC.

Ninety-Six Branches and Chapters Throughout America
National Headquarters — Munsey Building, Washington 4, D. C.

SKILL, INTEGRITY AND RESPONSIBILITY IN CONSTRUCTION OF BUILDINGS, HIGHWAYS, RAILROADS, AIRPORTS AND PUBLIC WORKS



SHOVEL . . .



TRENCH HOE

DOLLAR for DOLLAR

of First Cost and Operating Cost
THE

3/4-SWING BADGER

**MOVES MORE MATERIAL . . .
FASTER AND CHEAPER**



DRAGLINE

Check these BADGER FEATURES

- ✓ Lighter Swinging Weight
- ✓ Extra Dumping Height
- ✓ Greater Stability
- ✓ Extra Reach
- ✓ Better Visibility
- ✓ Easily Portable
- ✓ No Tail Swing
- ✓ Fully Convertible

AND ASK YOUR NEARBY A-W DEALER to tell you the whole story of how the versatile BADGER will save time and make money for you.

AUSTIN-WESTERN COMPANY
AURORA, ILLINOIS, U. S. A.



WHEEL MOUNTS

BUILDERS OF ROAD MACHINERY
Austin A Western
SINCE 1859



Travel-hungry owners of new cars won't be content with around-the-block driving. They'll be taking to the open road—heading for sea-shore, lake or mountains, or distant hunting ground, or maybe just to satisfy the urge to travel.

As car and truck production mounts, motor traffic promises to surpass anything this country has seen. That means more roads. Two-lane, four-lane, even six-lane highways will be needed to handle this heavier traffic swiftly and safely.

If you have a contract for a highway job, Bethlehem's steel service

to contractors offers advantages well worth considering. By placing a single order with Bethlehem for all the steel needed on a highway project you save in several ways. You save bookkeeping. You save needless follow-ups. And you save by avoiding delays.

When you use Bethlehem's steel service all the steel required for the job is supplied from a single, dependable source. Shipment from a strategically-located Bethlehem warehouse is so scheduled that each individual item is delivered to the job when you are ready for it.

LEADING BETHLEHEM HIGHWAY PRODUCTS

Road Joints	Reinforcing Bars
Bar Mats	Guard Rail
Guard Rail Posts and Brackets	
Wire Rope and Strand	
Hollow Drill Steel	
Fabricated Steel Construction	
Sheet and H-Piling	
Tie-Rods, Spikes, Bolts and Nuts	

BETHLEHEM STEEL COMPANY
Bethlehem, Pa.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

STEEL for HIGHWAYS



Wherever They Go—

Whatever They Do

**DIAMOND CHAIN
DRIVES DELIVER
DEPENDABILITY**



Lorain Shovels, Cranes, Draglines, Clamshells and Motorcranes for many years have established a solid reputation for ruggedness, highly dependable earth-moving and material-handling efficiency.

Knowing field requirements, Lorain engineers specify drives of proven reliability, great reserve strength and long-life efficiency—drives that experienced construction contractors prefer—Diamond Roller Chain Drives.

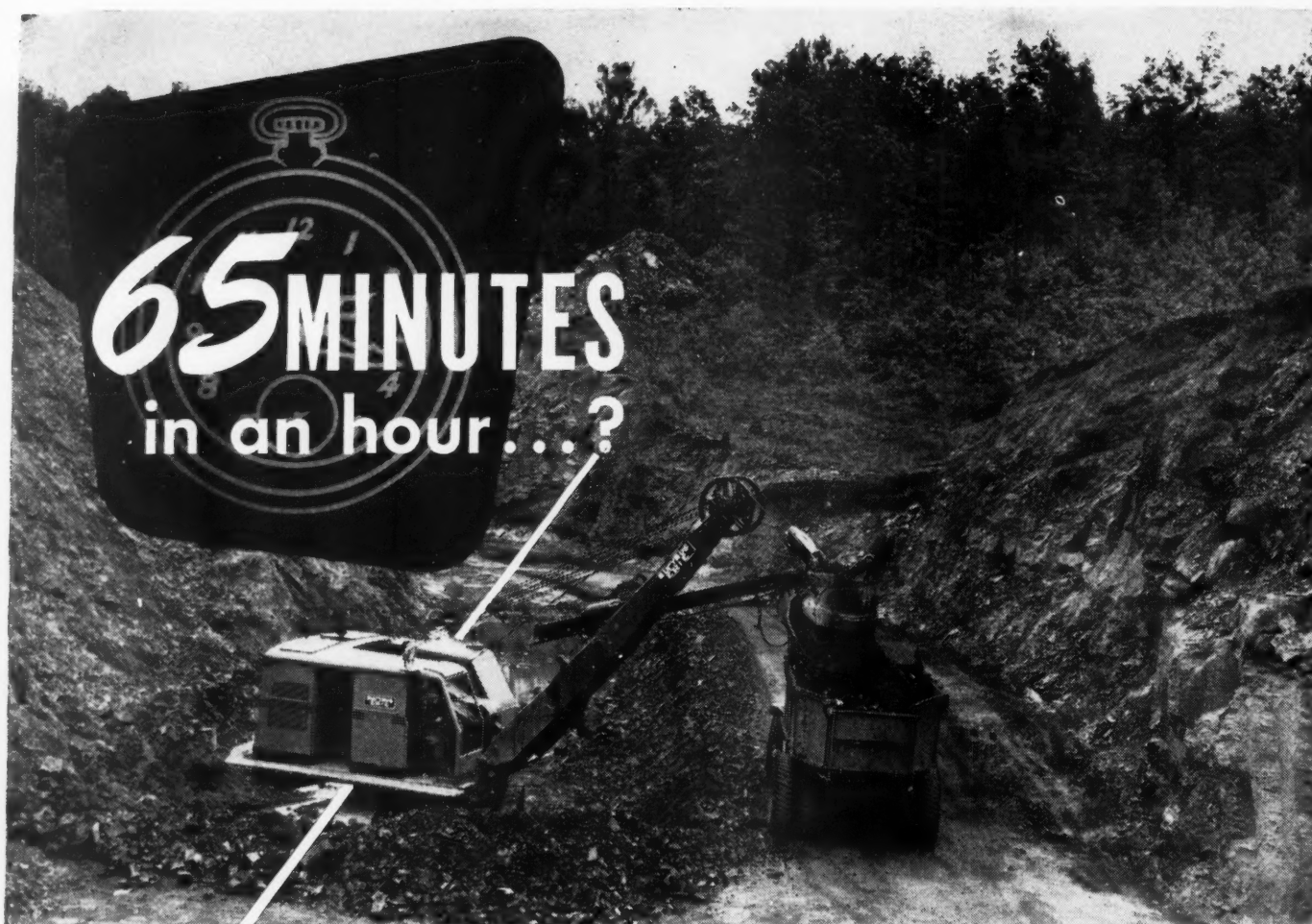
DIAMOND



**ROLLER
CHAINS**



DIAMOND CHAIN COMPANY, Inc., Department 418, 402 Kentucky Avenue, Indianapolis 7, Indiana



Obviously,
... no

ADJUSTMENTS, because they are all easy to make and last once you make them;

MAINTENANCE, because machinery arrangement is simple and accessible, and because balanced minimum-stress performance means few repairs;

LUBRICATION, because fittings are easy to reach, difficult to overlook;

MOVES, because the simple, efficient caterpillar mounting and the easy steering combine to permit fast maneuvering on the job;

But by taking advantage of the extra working time you get every hour of every shift with Bucyrus-Erie $\frac{3}{8}$ - to $2\frac{1}{2}$ -yard excavators, and measuring time in terms of output, you get a similar effect. With Bucyrus-Eries you "expand" each hour by saving time on:

OPERATING, because the controls give "full feel," are easily operated, and are all conveniently grouped so that the operator does not need to leave his position.

That means more time to put to work really outstanding digging ability — the result of design that combines the best performance features developed in Bucyrus-Erie's long experience in manufacturing excavators. Quickly convertible in the field, Bucyrus-Eries are equally effective as shovels, drag-lines, clamshells, or cranes.

**BUCYRUS
ERIE**

SOUTH MILWAUKEE, WISCONSIN

you make the
most of
EVERY HOUR
with a
BUCYRUS-ERIE

"Another perfect job—"

reports our demonstrator on this
power plant addition in Texas.



Difficult soil conditions (clay and sand), fifteen feet of water, an adjacent building—necessitated very careful dewatering of this work.

Moretrench engineers planned the well-point setup. A Moretrench demonstrator installed the equipment. *Results were immediate—and most satisfactory!*

*Progress on your wet job is assured
when you place an order with MORETRENCH*

MORETRENCH CORPORATION

90 WEST STREET, NEW YORK 6

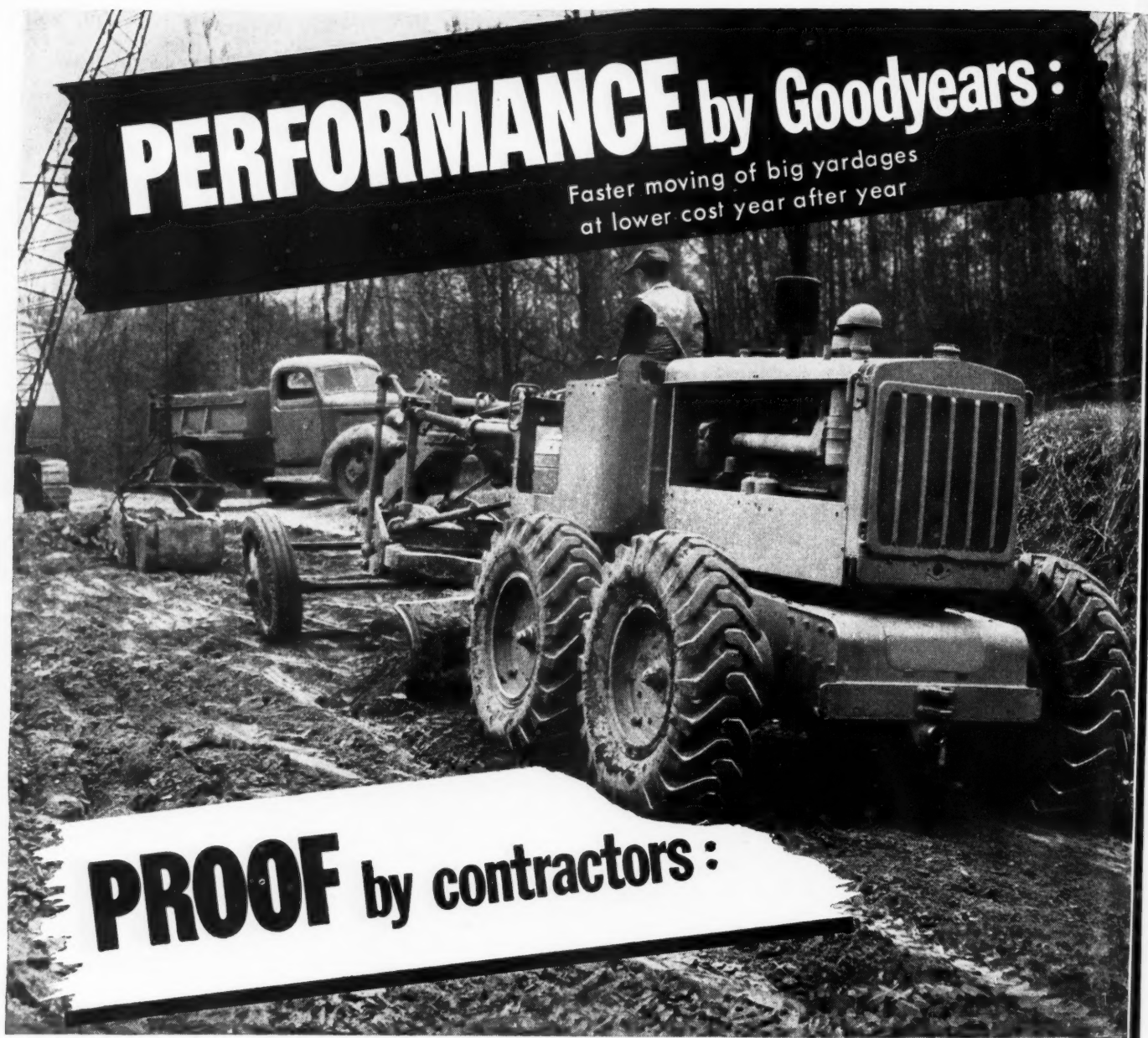
ROCKAWAY, NEW JERSEY

3037 So. Christiana Ave.
CHICAGO 23, ILL.

2424 Chicago Ave.
TAMPA 6, FLA.

315 W. 25th St.
HOUSTON 8, TEX.

PERFORMANCE by Goodyears:
Faster moving of big yardages
at lower cost year after year



PROOF by contractors:

Year after year, more yards are moved on

GOOD YEAR

off-the-road tires than on any other kind!



1. **SURE-GRIP** for maximum traction on drive wheels
2. **ALL-WEATHER EARTH MOVER** for drawn vehicles and general traction
3. **HARD ROCK LUG** for all rock work

Sure-Grip, All-Weather-T.M.'s The Goodyear Tire & Rubber Company

Construction Methods

WALDO G. BOWMAN, Editor

Volume No. 28

OCTOBER, 1946

Number 10

U. S. Bureau of Reclamation Photos

LAND PLANER

**Smooths Rough Ground
After Clearing Operations**

A DIRTMOVING CONTRACTOR from Amarillo, Tex., R. C. Higley, head of Tri-State Contractors, has developed a novel machine for restoring land torn up by clearing and grubbing operations to tillable smoothness. The machine will also furrow the land for irrigating, if desired.

The rig, known as the Higley Land Planer, consists of a 12-ft. mold board, 22 in. high with 6-ft. wings mounted on a rigid frame of 4-in. welded pipe 50 ft. long and 12 ft. wide. The mold board, rigidly attached to the frame 29 ft. behind the front end, acts as a bottomless scraper with a capacity of about 6 cu. yd. Four pneumatic tires carry the rig, the front two being fastened to a swivel arch for steering. Behind the blade is a multiple-tooth rake or roter that can be dropped down to plow furrows.

A D-7 Caterpillar tractor, equipped with a double-drum power control unit pulls the rig. Cables from the control unit hoist the rake clear of the ground and can raise the whole frame through a 3-point suspension 28 in. for traveling. When in use, the frame clears only 4 in., so if one wheel drops into a

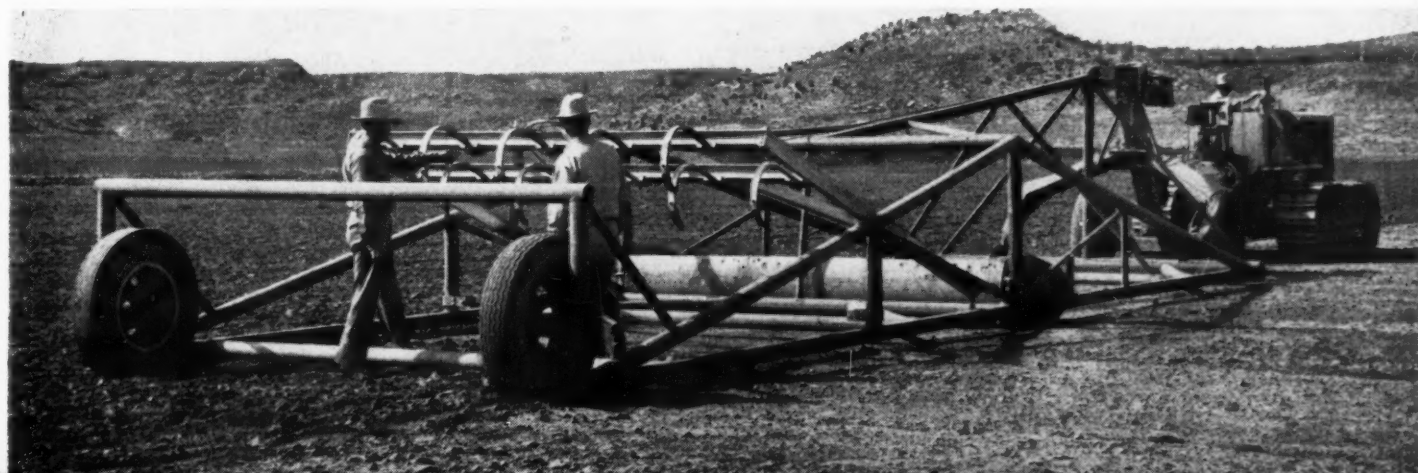


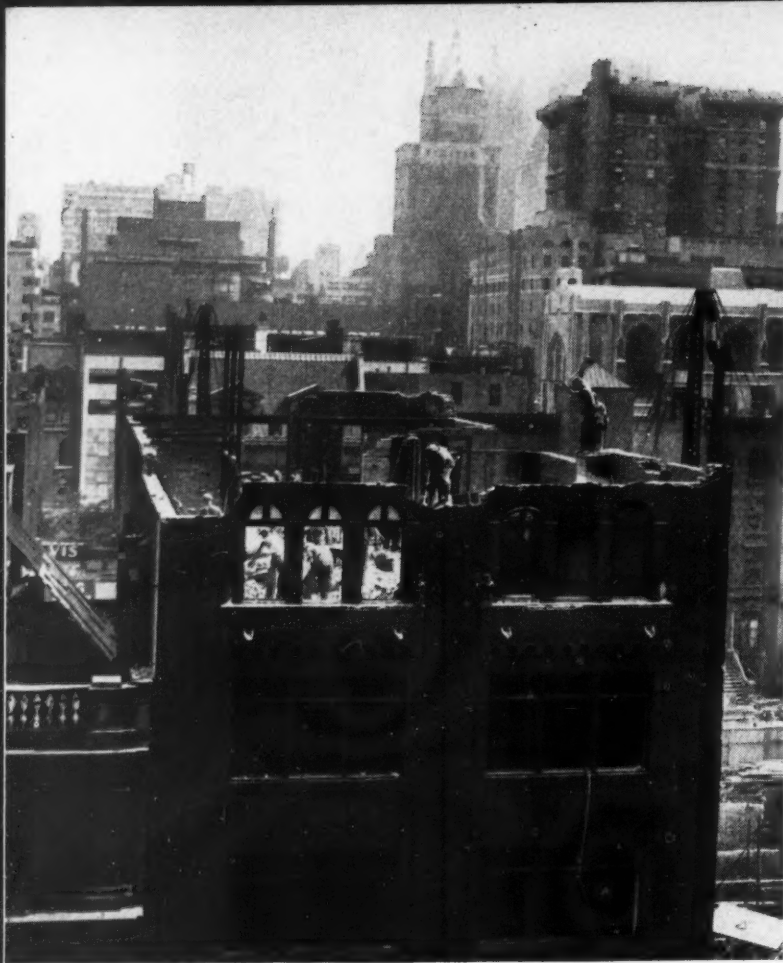
WELDED ARCH on front end of land planer permits turning of front wheels for steering. Plane is hauled by tractor whose double-drum power control unit, shown at right, raises entire frame for traveling and also handles rake that can be lowered to plow irrigation furrows.

hole, the frame skids and keeps the blade from gouging the earth which drops into holes and low places. Three of the rigs are now in use in Texas and New Mexico, each leveling from 20 to 40 acres per 10-hr. day at an average cost of \$6 per acre.

Page 75

LAND PLANER (below) of simple 22-in. blade on big welded frame smooths southwest land left rough by clearing of mesquite and other brush. Rear rake can be lowered for plowing furrows. Machine shown here in working position; whole frame is lifted 28 in. for traveling.



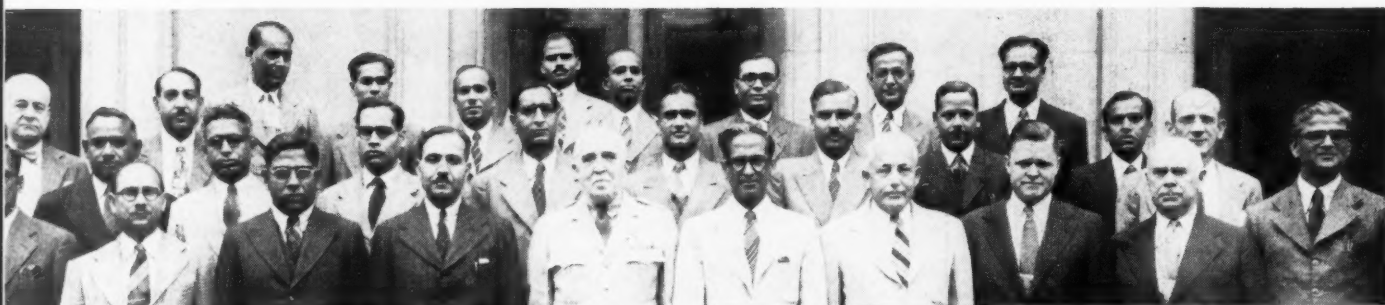


THIS MONTH'S NEWS REEL



MAKING ROOM for expansion of Rockefeller Center, housewreckers tear down building on West 51st street in New York City.

Wide World Photo

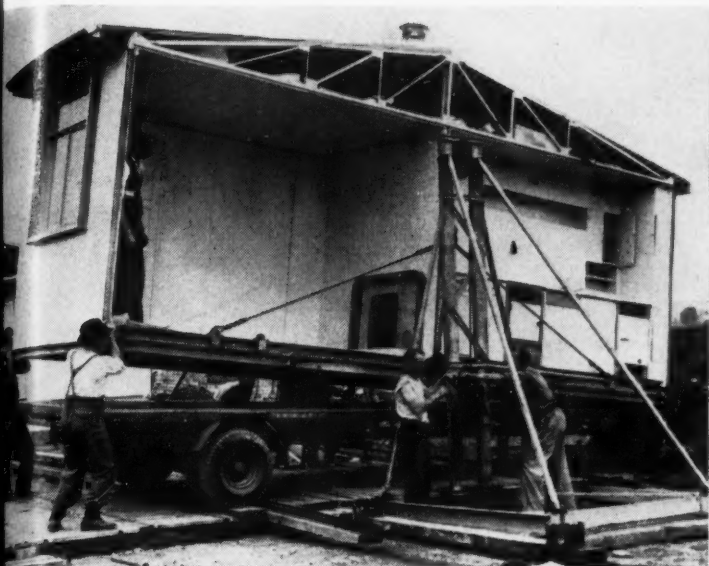


PUBLIC WORKS OFFICIALS FROM INDIA are touring United States to study road-building methods, under auspices of Indian Agency General at British Embassy. Delegation of 22 engineers was formally welcomed at Washington by MAJOR GENERAL PHILIP B. FLEMING, Federal Works Administrator, and other FWA officials.

BREAKING GROUND for \$18,000,000 Cherry Creek Dam and Reservoir (below), 10 mi. southeast of Denver, Colo., are (left to right): Denver Chamber of Commerce President R. S. McILVAINE, GOVERNOR JOHN C. VIVIAN of Colorado, and BRIG. GEN. LEWIS A. PICK, Missouri River Division Engineer, Omaha, Neb. David G. Gordon, Denver, and Bressi & Bevanda, Los Angeles, have contract for first unit of construction.

PRIZES TOTALLING \$200,000 will be given in the Design-for-Progress Award Program, closing June 1, 1947, sponsored by The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio. Typical of entries in structural classifications is this steel fabricated house (below), winner of award in previous contest.





PREFABRICATED BUNGALOWS of aluminum are being erected at rate of one every 2 hr. at Lea-Grove, Luton, England. Here one of four units comprising each 2-bedroom house is being unloaded from trailer by jinnywink crane. Gang of six men places units on prepared foundations.

British Combine Photo



SEVEN-MILE EL MIRADOR TUNNEL IN MEXICO, circular concrete-lined bore with 16-ft. inside diameter, is being completed by Constructora Rosoff, S.A., as part of \$11,000,000 Valsequillo irrigation project near Puebla. Concrete lining was placed behind Blaw-Knox telescopic arch forms of three-segment type, built in 25-ft. units and aggregating 300 ft. in length. For Rosoff organization, M. L. MacLean is chief engineer, J. F. Holden, general superintendent, George Underwood, superintendent, and H. E. Cronin, resident engineer.

Page 77



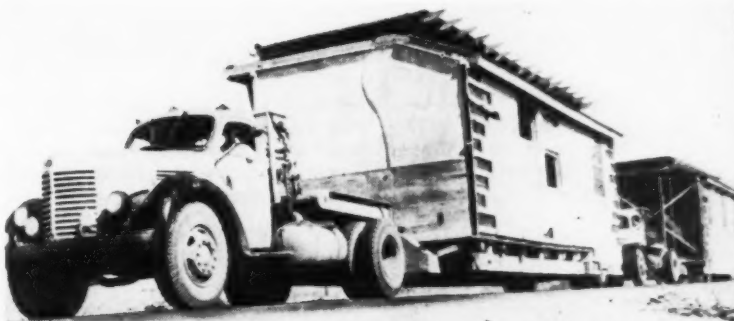
VISITING SHIPYARD of Ingalls Shipbuilding Corp., Pascagoula, Miss., to inspect four dredges being built for U.S. Engineers are (left to right): **LIEUT. COL. A. B. PICKETT**, district engineer, New Orleans, La.; **COL. D. W. GRIFFITHS**, district engineer, Galveston, Tex.; **COL. RALPH CRUSE**, district engineer, Norfolk, Va.; **COL. F. F. FRECH**, district engineer, Philadelphia, Pa.; and **MAJOR W. W. VANCE**, Galveston, Tex.

ARMY HOSPITAL WARDS, cut into 10 sections at Camp Howze, Gainesville, Tex., are transported by low-bed trailers 80 mi. to Southern Methodist University campus at Dallas, where they are being reassembled for veteran student housing.

Wide World Photo

TEREDOS AND LIMNORIA cause collapse of two spans (below) on busy New Jersey shore road between Brielle and Pt. Pleasant. Bridge, built in 1924, is founded on concrete piers carried on untreated wood piles driven through sand into hard clay. Subsequent scour of sand exposed piles to attacks of marine borers resulting in complete disintegration of piling. Bents for temporary timber deck will be driven through holes cut in deck slab of collapsed spans.

Photo, Courtesy Ralph Mann





ROCK FROM SMALL CUTS is usually loaded into same wagons that haul earth fill—in this case Tournapull wagon units with welded skirts that add 2 or 3 yd. capacity. Scrapers and shovel units often work same cuts, as shown here on Savin's job.

DIRT FLIES

ON MAINE TURNPIKE

LARGE ROCK from both borrowpits and cuts is carefully spread throughout fill in layers (below) and then filled in with earth. Here a Tournapull wagon is dumping earth over rock layer while Caterpillar bulldozer stands by ready to spread earth fill and work it well into voids between stones. To make sure such a fill is well tamped, tractors roll it thoroughly after earth cover is in place.



TWO CONTRACTORS are making the dirt fly—some 4 million yards of it—on the 4-lane 44-mi. superhighway being built by the Maine Turnpike Authority between Kittery and Portland. Grading, with excavation running about 100,000 cu. yd. per mi., is on a rush schedule this season to get the project ready for paving as soon as the frost leaves the ground next spring. Turnpike officials hope to have Maine's first toll road in operation by next October.

The superhighway is unusual in several respects. It will have two 24-ft. roadways, with wide shoulders, separated by an 18-ft. median strip between shoulders, all carried on a 94-ft. wide grade. Besides the two ends, there will be



MAINE TURNPIKE GRADING is well along, as this view near Kennebunk shows. Here is a section all finished except for final trimming and grading up of median strip. Grade is 94 ft. top width; cut slopes in earth are 1 on 2 for cuts over 5 ft., 1 on 3 for shallower cuts; fill slopes are 1 on 4 under 10 ft. high, 1 on 2 over 10 ft.

only three other points of access, interchanges at Wells, Saco and Biddeford. The new road roughly parallels and runs about a mile or so west of existing U. S. Route 1.

Because the project lies in heavy frost country, the paving will rest on a fill of permeable material (selected sand and gravel) from 18 in. to 4 ft. thick depending upon underlying soil conditions. This material is intended to lower the ground water level and to eliminate capillary water travel through the subgrade, thus preventing frost boils and heaving. Of the 41 bridges on the project, two are major crossings over the York and Saco Rivers. One is a superhighway overpass over the Boston & Maine RR., and the other 38 are overpasses carrying local and state roads over the new turnpike. The two river bridges were let as a separate contract, while the other 39 were grouped in an-



ROOTS AND SOFT MUCK are removed by clamshell and hauled off job. Clearing shown here is average, though some runs heavier. Deep layer of permeable material will be placed under paving in areas like this to prevent frost heaving.

Page 79

ROCK EXCAVATION is kept to minimum, but where necessary, contractors set up for efficient operations with portable compressors and wagon drills (below) Blasted rock is not wasted, but is incorporated into fill carefully embedded in earth. This is on Lane's section.





WHERE ROCK PREDOMINATES on Savin's work it is hauled and spread with Athey crawler wagons. Here Savin is excavating with Northwest 80D shovel. Rock outcrops such as this one are avoided, if possible.



FINAL TAMPING of grade, before application of permeable subgrade, is by wobbly wheel pneumatic roller pulled by light farm tractor.

Page 80

MUCH OF FILL and most of permeable material for sub-base must come from borrowpits whose locations sometimes mean long hauls up to 3 or 4 mi. Northwest-Euclid shovel-wagon combination shown here (below) is typical of borrowpit equipment layouts. Savin also operates a fleet of Tournapull wagons.



other contract. Minor drainage, box and pipe culverts are included in the grading contracts. Paving bids will be called for in October of this year to permit the successful contractors to make equipment and material arrangements for an early start next spring.

The job was set up as a post-war project and as such was probably the first major highway operation to get under way as a complete project. Last fall the engineering firm of Howard, Needles, Tammen & Bergendoff, New York and Kansas City, was retained as consulting engineers in charge of design and supervision of construction, with plans and specifications to be reviewed by the state highway department. A preliminary report was first prepared. As no money was initially available for definite planning, no great progress in engineering and design was possible until after the bonds were sold. A total of \$15,000,000 revenue bonds, authorized by the legislature, were sold Feb. 15. They bear 2½ percent interest, undoubtedly the lowest-rate construction bonds ever sold.

This \$15,000,000 was provided to cover everything from engineering, financing, right-of-way purchases and all construction right up to opening of the toll gates ready for traffic. Once the bonds were sold and were drawing over \$1,000 interest daily, speed became paramount to get the job done as soon as possible so revenue from tolls could be col-

SMALL BACKHOES (below) come in mighty handy in excavation of culvert trenches. Wherever possible, cross drainage is installed ahead of grading, but often pipes are installed after grading is well along.





SCRAPERS are playing big part in grading turnpike. Here is some short-haul cut-and-fill work on Lane's job near Saco being handled by tractor-hauled LeTourneau scraper units.

Page 81

lected. The engineers moved into quarters at Kennebunk Feb. 20, 1946, and by May 2 were far enough along to open bids on the grading. While bids were taken on four sections, two contractors got the entire grading job. A. I. Savin Const. Corp., East Hartford, Conn., was awarded the 22-mi. south half, and Lane Construction

Corp., Meriden, Conn., got the north half. On a later award Lane was successful bidder on the 39 small bridges, while Ellis C. Snodgrass, Inc., Portland, got the two river bridges.

As a part of the engineering investigations carried out prior to and after contract letting, Dr. Hamilton Gray of the University

of Maine has headed a special staff on soil mechanics and geological studies. This staff checks compaction of embankments and soil loading and determines the thickness of the permeable subgrade to be placed under every foot of the turnpike. In rock cuts the permeable layer is a minimum 1 ft.

(Continued on page 165)

SUBSTANTIAL SIDE DITCHES (below) are cut out with LeTourneau scrapers on Savin's section.

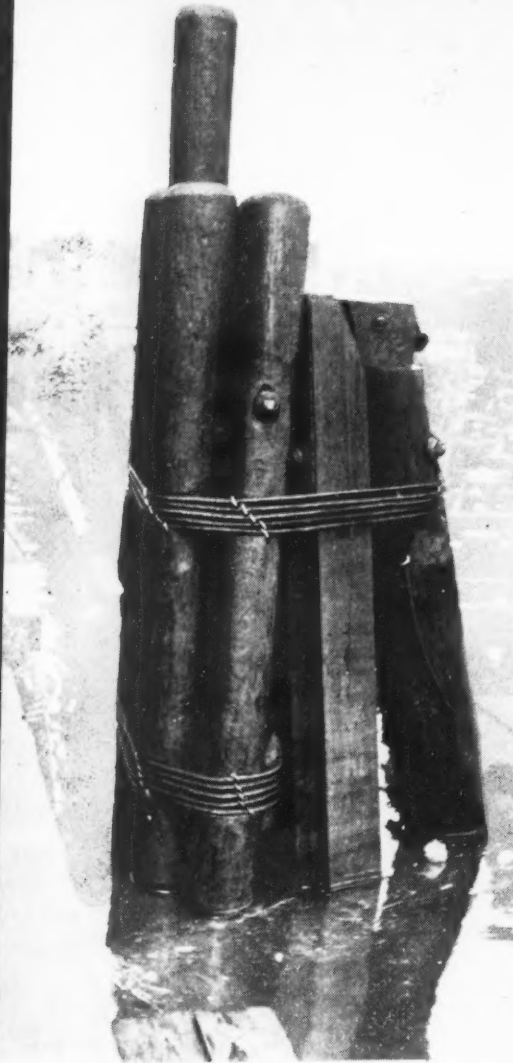
CONCRETE FOR BOX CULVERTS is hauled as far as 35 mi. in transit-mix trucks from Portland for south part of job. Here brand new P&H truck crane (below) handles concrete in buckets for Branch Brook culvert. This is a ticklish job, for brook is a municipal water supply, and all water from work must be pumped over hill into another drainage area to avoid pollution.



STEEL TRIPOD

Braces Composite

Mooring Dolphin



COMPOSITE DOLPHIN of steel and timber piles is firmly anchored in shattered but unexcavated trench in rock of harbor bottom. Cluster has strength and resilience to absorb impact of heavily-laden coal barges at unloading wharf.



CONTRACTOR DEVELOPED composite dolphin when lack of soft bottom material made driving all-wood-pile cluster impractical. Visiting job are GEO. W. ROGERS (with hat), president, and E. G. CAREY (center) vice-president and chief engineer of Geo. W. Rogers Construction Corporation flanked by P. WAXMAN (left) job engineer and J. HOOGENDOORN, superintendent. A. B. FLECK special engineer for American Mutual Liability Co. is at right.

STEEL PILE TRIPODS, anchored in a blasted but unexcavated trench in harbor-bottom rock, served as main frames for steel and timber-pile mooring dolphins at Staten Island, N. Y., where there was insufficient soft material

to support normal pile clusters. The contractor, Geo. W. Rogers Construction Corp., developed the idea of driving the steel piles into the fragment filled trench to eliminate the costly trench cleaning and sand backfilling that would

have been necessary with all-wood-pile dolphins. This procedure resulted in an estimated saving of \$1,000 per cluster.

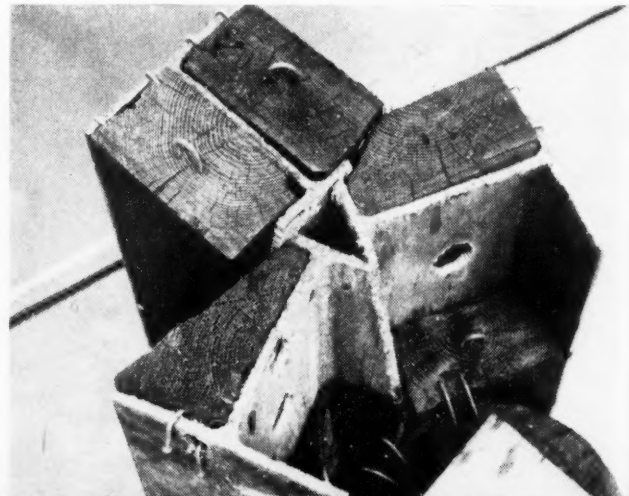
The original plans called for alternate clusters of 7 and 13 wood piles to be driven into a 10-

Page 82

TIMBER BLOCKING (below) at water level braces wood batter pile to steel tripod. Final step in cluster construction is to wrap dolphin with two steel cable ties, each having five turns. Piles are through-bolted with 1/4-in. galvanized bolts.



STEEL PILES (below) are welded to form tripod frame for mooring dolphin after McKiernan-Terry 9B3 hammer drives them to trench bottom through 8 ft. of blasted rock. Pile flanges are cut to allow minimum 2-ft. length of 3/8-in. weld at each joint.



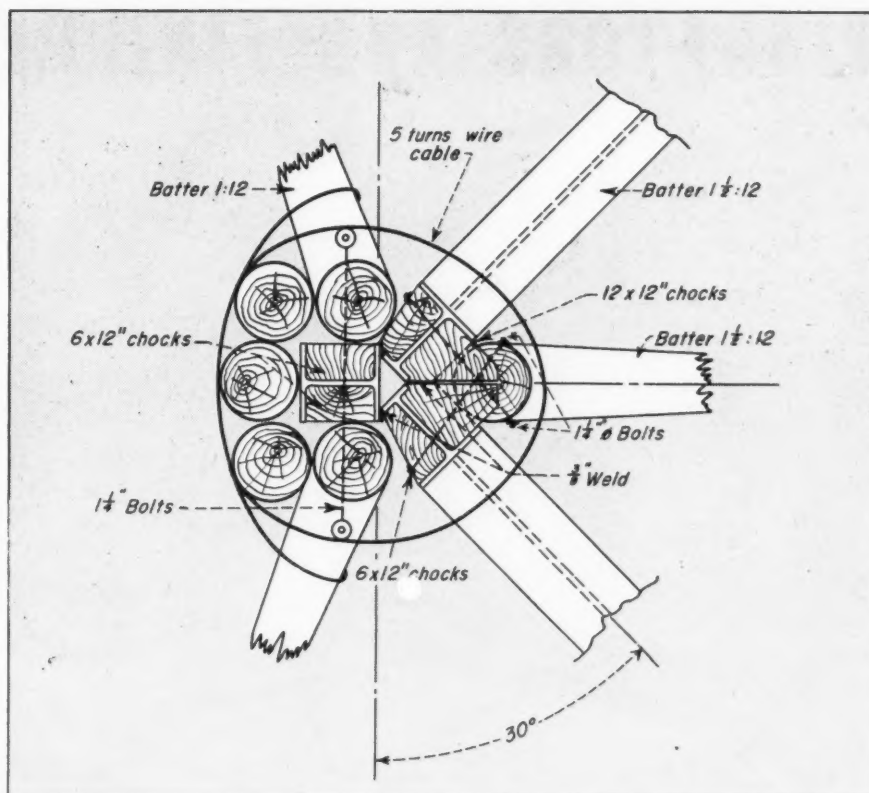
ft. silt blanket overlying granitic rock 25 ft. below mean low water. When subsequent channel dredging removed this silt layer and made the original dolphin design impractical, the contractor devised a novel composite cluster of three steel and six timber piles and an economical method of founding them in the rock bottom.

Dolphin Construction

The first step in cluster construction was to shatter a trench 12 ft. wide and 8 ft. deep along the line of proposed dolphins. The trench was left unexcavated and a 12-in., 53-lb. H-section 46 ft. long was driven to the bottom of the cut through the blasted rock fragments that ranged up to small derrick stone in size. This pile was driven plumb, and two additional steel piles of similar section were driven next to it on a $1\frac{1}{2}$:12 batter oriented 30 deg. behind the dolphin line. After driving, the under flanges of the batter pile tops were trimmed to fit flush with each other and with the near flange of the plumb pile for a minimum 2-ft. distance. Welding the joints with $\frac{3}{8}$ -in. fillets tied the piles into a stable tripod firmly anchored in the rock-filled trench.

An auxiliary tripod of timber piles was then driven around the steel piles. The two piles on the channel or mooring side, splayed slightly in front of the cluster, were battered 1:12, while the pile at the rear was driven at a $1\frac{1}{2}$:12 batter normal to the dolphin line. Three plumb piles were driven at the dolphin face, and the composite group of piles was tied together with bolts and wire cables to form a flexible yet sturdy cluster.

Construction of 16 dolphins was part of extensive waterfront improvement work done under sub-contract by the Geo. W. Rogers Construction Corp., New York City, at the new Arthur Kill generating station of the Staten Island Edison Corp. The composite clusters were designed by E. G. Carey, vice-president and chief engineer and V. N. Nichols, assistant chief engineer of the Rogers firm whose job superintendent was Joseph Hoogendoorn. General contractor for the plant construction was Thompson-Starrett Co., Inc. of New York for whom Arthur Everett was superintendent. Gilbert Associates, Inc., Reading, Pa., were consulting engineers and architects.



PILE CLUSTER, shown here in plan, includes three steel and six creosoted wood piles welded, bolted, and cabled together into sturdy group. Timber piles, fitted with steel driving shoes, are firmly keyed into rock fragments in trench.

Rugged Track Tests Contractors Trucks

SCIENTIFIC DATA on truck performance are obtained at the Clintonville, Wis., proving grounds of the Four Wheel Drive Auto Co. The rugged test track, designed by Professor R. A. Moyer of Iowa State University, provides almost every conceivable type of operational road trial as well as severe torture tests.

In the hill climb, trucks are driven up gravel and smooth-plank inclines at 65 and 70 percent grades. A 30-ft. mud hole, filled with $3\frac{1}{2}$ ft. of mire and clay tests truck performance in sticky material, while a 210-ft. sand pit on a 6-percent grade tests their ability to operate through a 3-ft. depth of fine blow-sand. Trucks are put through a torsion test by driving them at an angle across a series of parallel ditches. During an impact

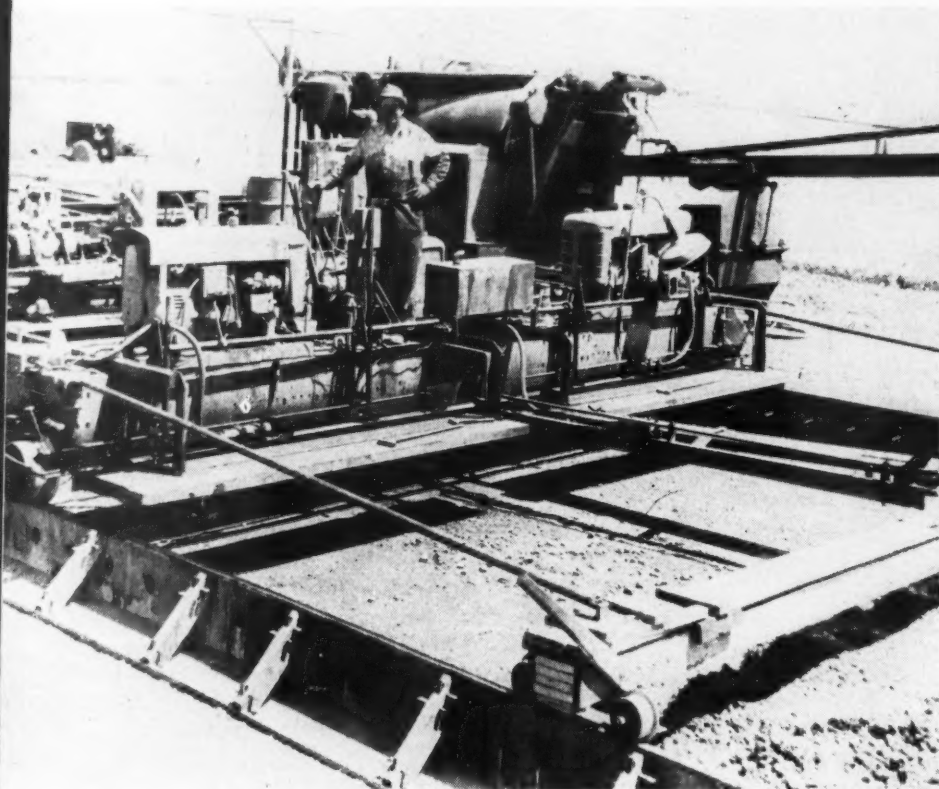
test, one FWD truck crashed into a clay bank at 25 mph. more than 1,000 times without a major mechanical failure. Tests of a more scientific nature are run on black-top and concrete tracks where precise information is obtained.



FOR HILL CLIMB TEST, truck negotiates smooth plank incline on 70-percent grade after starting from dead stop at bottom.

VIBRATORS AND FINISHERS FOR THICK U

Placing 18-In. Slab at Fairfield-Suisun

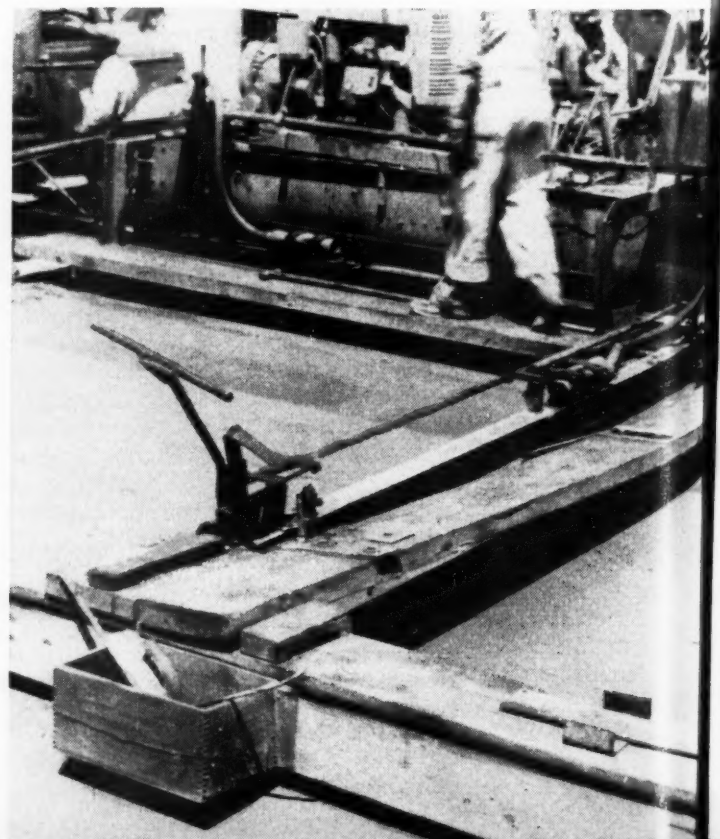
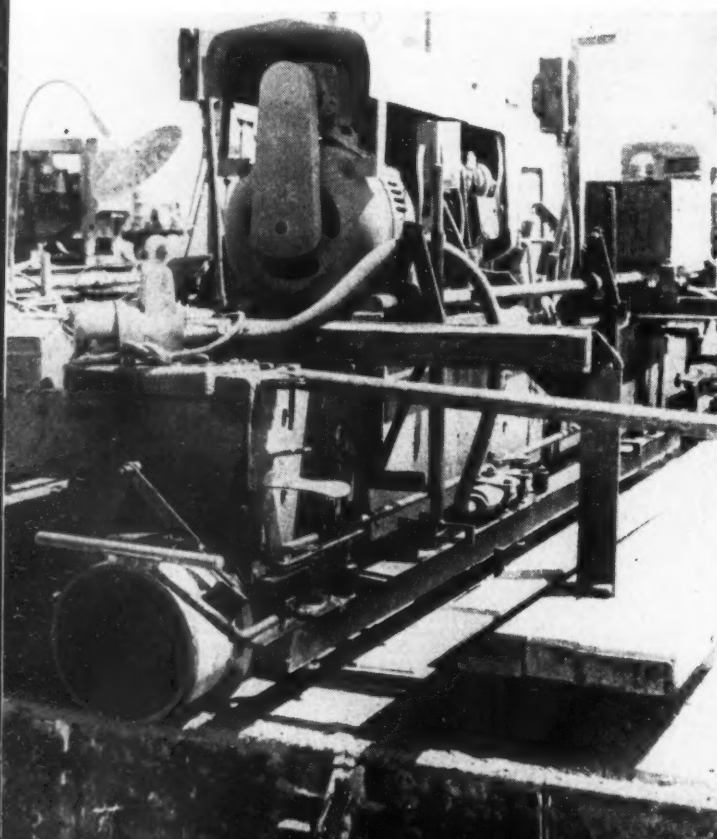


ATTACHED to a Jaeger-Lakewood finisher is specially developed device for placing steel blanks for dummy contraction joints in heavy concrete paving. As joint spacing is 12½ ft., both longitudinal and transverse joints are required in each 25-ft. strip.

Page 84

THIS CLOSE-UP (below) shows device for placing transverse blanks. Steel blank, ¾ in. x 4 in. x 12½ ft., is lowered to surface of concrete by lever in foreground and is vibrated into place in 4 or 5 sec. by vibrator mounted above wheel of finisher.

LONGITUDINAL JOINTS (below) are placed by similar apparatus. Steel blanks are withdrawn from dummy joints when concrete is stiff enough to hold its shape.



PA
8-

de
ve

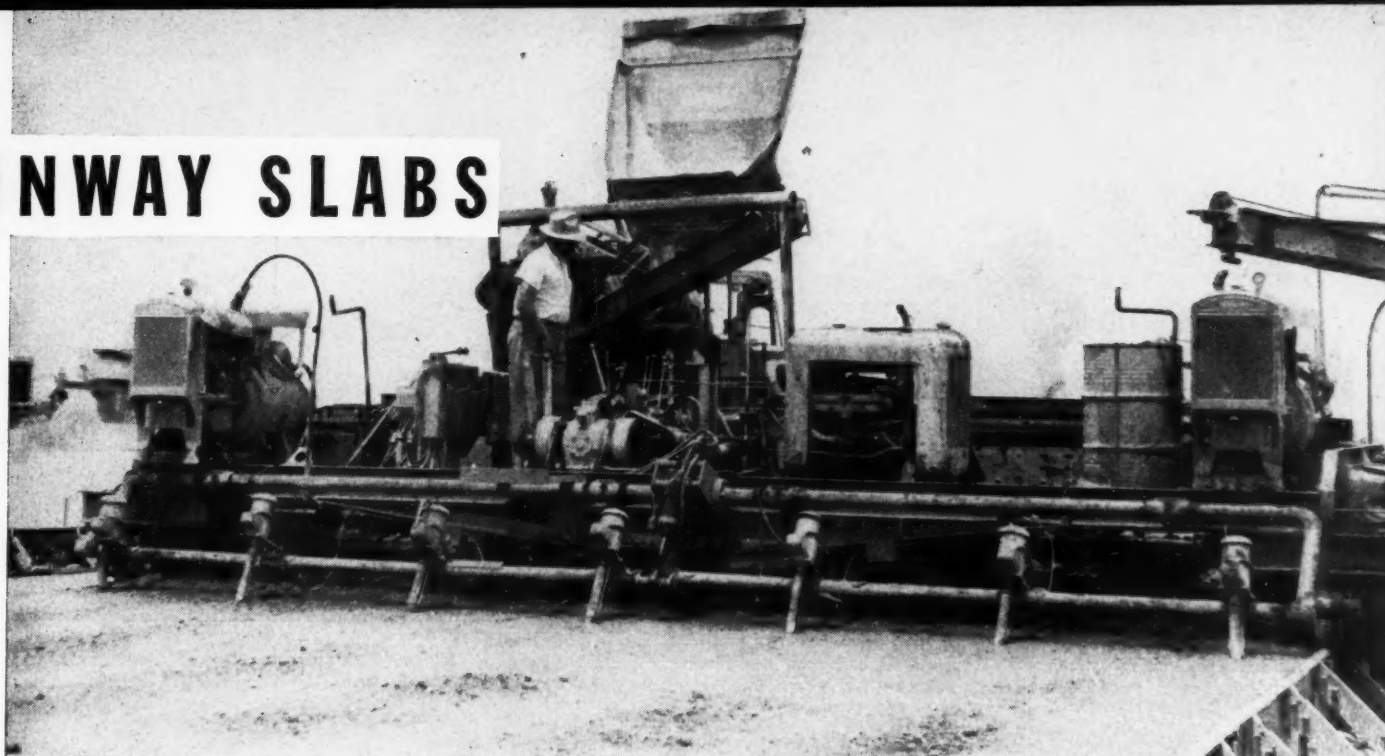
bla
tio
inv
the
vib
Vil
ma
in.
int

A
ft.
12
tran
Wit
tran
are
T
Aft

AT
port
ing
126,
slum
16 in
apro
pair
comp
crete
form
Jaeg

Page

RUNWAY SLABS



PAVING RUNWAY SECTION, 25 ft. wide and 18 in. deep. Two Rex pavers supply concrete to Blaw-Knox spreader. Two Kohler 8-kw. generators on spreader supply power for seven Viber Co. vibrators used for compaction.

details about the equipment developed.

A device for placing the steel blanks that form dummy contraction joints, developed for this job, involves lowering the blanks to the surface of the concrete and vibrating them into place with a Viber Co. vibrator. Thus, in a matter of 4 or 5 sec., blanks $\frac{3}{8}$ in. x 4 in. x $12\frac{1}{2}$ ft. are vibrated into place.

As the runway is paved in 25-ft. strips and the joint spacing is $12\frac{1}{2}$ ft., both longitudinal and transverse joints are required. With this rig three blanks (two transverse and one longitudinal) are placed in one operation.

The method used is as follows: After the concrete has been spread

and then finished with a Jaeger-Lakewood finisher, the dummy joints are placed by the device attached to the after-end of the finisher. The finisher is spotted at the approximate location required, and the exact location of the blanks is made by the placing apparatus which has a play of a few inches. The blanks are then lowered to the surface of the concrete and vibrated into place. After the concrete is stiff enough to hold its shape, the steel blanks are withdrawn, cleaned off and oiled for reuse.

To secure the required compaction of this paving job, Viber Co. vibrators were attached to the Blaw-Knox concrete spreader. Powered by two 8-kw. Kohler

generators mounted on the spreader, the vibrators were attached to a frame which could be swung out of the way when necessary.

Several arrangements were tried before the present plan was adopted. Two of the earlier assemblies were shown in the January issue of CONSTRUCTION METHODS. The plan now used has seven vibrators mounted in a single row, as illustrated in the photograph at the top of the page.

Work at Fairfield-Suisun is under the direction of the Sacramento District, U. S. Army Engineers. Concrete paving was done by the Morrison-Knudsen Co., Inc., Paul R. Stevens, paving superintendent.

Vibratory Paving Tube Tames Harsh Concrete

AT BARKSDALE FIELD, Shreveport, La., a Jackson Vibratory Paving Tube successfully handled 126,000 sq. yd. of harsh, 2-in. slump concrete in slabs from 11 to 16 in. thick for new taxiways and aprons. This rig, essentially a pair of full-length vibrating tubes completely submersible in the concrete, was carried on a pair of form rail wheels in front of a Jaeger-Lakewood finisher. The

VIBRATORY TUBES, buried in concrete, shake harsh concrete into plastic mix on Barksdale Field thick taxiway slab.





TUBES ARE RAISED when finishing machine backs up for second pass at slab. Nature of dumped piles of concrete in foreground indicates harshness of mix. Eccentric-shaft motors on vibratory tubes can be seen just above concrete.

tubes, hydraulically raised or lowered at will, are vibrated by eccentric-shaft electric motors. Power for the motors comes from a gas-driven generator on the finisher.

In general, the slabs at Barksdale Field were 11 in. thick with 16-in. edges. Widths varied in multiples of 25 ft., and all concrete was laid in 25-ft. strips. Transverse expansion joints of $\frac{3}{4}$ -in. redwood with 1-in. sliding dowels were placed from 80 to 120 ft. apart. Longitudinal joints between 25-ft. strips were plain except for expansion dowels. Longitudinal dummy joints were scored

in the slab midway in the strips.

To meet variations in aggregates, the mix contained from 32 to 36 percent sand, with six bags of cement and 4.5 to 5.2 gal. water per cu. yd. The slump was held to 2 in., which resulted in a harsh mix difficult to place and handle. Mixing was done in a Koehring 34-E dual-drum paver that was consistently overloaded 20 percent with a 40.8-cu. ft. batch.

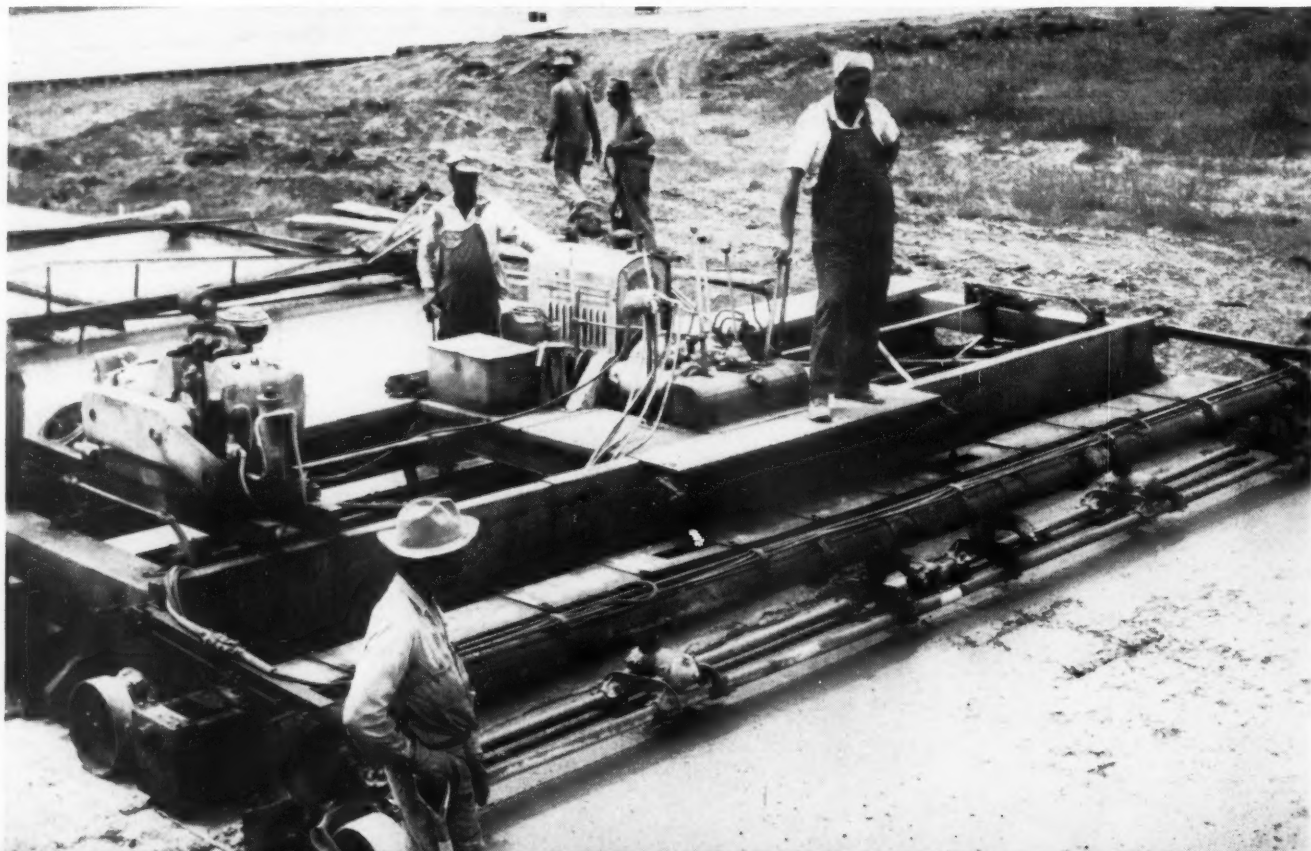
When dumped from the mixer bucket, the concrete piled up in a lifeless heap. With the vibratory tubes in lowered position for the full 25-ft. width, the finisher slow-

ly moved into the piles of concrete, and the mix would liven up and begin to flow into a workable mass. One pass of the tubes submerged was all that was necessary. With the tubes raised clear, the finishing machine would back up and take a second pass at the slab for final floating. Concrete was consistently placed at the rate of 100 cu. yd. per hr.

The job was under the Little Rock District, U. S. Engineers, with Robert Hill as resident engineer. Austin Road Co., Dallas, was contractor, for whom R. W. Dial was superintendent.

Page 86

TUBES REMAIN IN RAISED POSITION as Jaeger finisher (below) makes second pass over slab. This view shows how vibratory tubes are carried by separate assembly in front of finisher. Power for vibration comes from generator set on top of finisher.



DOO
elem
roug
wro
McM
Con
In a
his
deal
him,
drive
him
their
gestu
about
man
ever
Ma
of Ca
of 19
Huds
being
at Ne
made
at the
in ch
ing.
In
mond
super
later
Dock
New
the E
way o
Raym
gener
appoi
Unc
has be

*Cited
for
Service*

DOCKBUILDERS, who yield to no element of construction labor for roughness and toughness, really wrote this tribute to William V. McMenimen, president, Raymond Concrete Pile Co., New York City. In appreciation and admiration of his personality, character and fair dealing with those who toil for him, the Dockbuilders and Pile-drivers Local Union 1456 awarded him honorary life membership in their union. That simple, humble gesture by a labor group tells more about the sterling qualities of the man than could all the biographies ever written.

Mac left M.I.T. in his native city of Cambridge, Mass., with the class of 1903 to become a rodman on the Hudson & Manhattan tubes then being driven under Hudson River at New York. The long, lanky boy made good, and three years later at the age of 24 was superintendent in charge of a most difficult heading.

In 1911 McMenimen joined Raymond Concrete Pile Co. as general superintendent, but left two years later to organize his own company, Dock Contractor Co., to engage in New York subway work. When the European war interrupted subway construction, Mac returned to Raymond as vice-president and general manager in 1918. He was appointed president early in 1946.

Under his leadership the firm has become international in scope,



WILLIAM V. McMENIMEN

working throughout North and South America, Asia and Africa. Specializing in foundations, waterfront work and bridges, it has completed some of the most difficult jobs in the world.

Greatest of all achievements in a colorful career, however, is McMenimen's successful direction of Pacific Naval Air Base Constructors in building shore bases for the Navy. He was chairman in charge of a joint venture that eventually expanded to eight firms. The work included two jobs in California, then swept out into the broad Pacific to take in Pearl Harbor, Guam, Wake, Palmyra, Johnston, Midway, Samoa and Cavite.

Mac for 4½ years on these vital projects demonstrated his imagination and initiative, his courage and

integrity, his energy and determination, his organizing ability, technical skill and rare intuitive judgment. No one not connected with the project can fully realize the procurement and shipping problems, the difficulties in recruiting capable workers and holding them in lonely outposts, the organization job of keeping under way work scattered over ten million square miles of ocean, and the finesse required to weld eight independent contracting firms into a smooth-working outfit.

Here Mac was at his best. Here he did a job that will never be forgotten in construction history. Here he once more demonstrated the qualities that make him one of construction's outstanding men.

COLLAPSIBLE STEEL FORMS

Build Hollow-Wall Concrete Houses

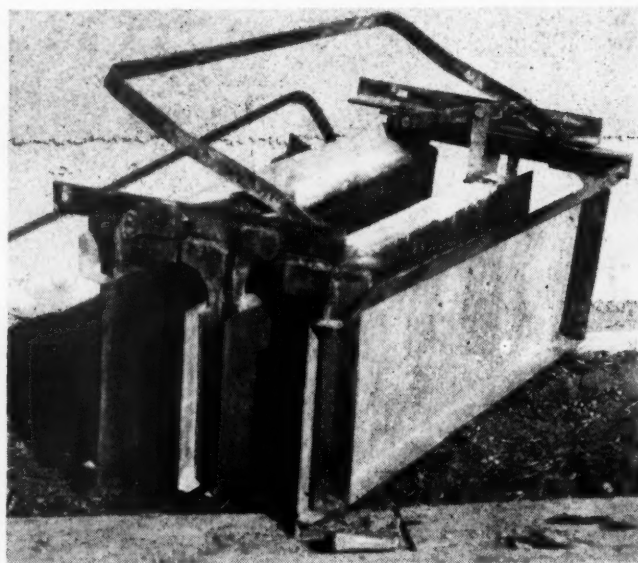


HOUSE BUILDER WALTER L. HOLLIDAY, of Holliday Construction Co., sights through Gurley transit which he purchased in Shanghai after it had been recaptured from Japs.

Page 88

HOLLOW CONCRETE WALLS for houses in Beaumont, Tex., are built up in 10½-in. courses between corner columns previously poured. Insulation space 2½ in. wide extends through all parts of wall, including corners.

→ FORM UNIT consists of steel frame mounting with sliding, hinged lever mechanism at each end for locking or collapsing the assembly.



SPECIALLY DESIGNED, movable steel forms light enough to be handled by hand are serving the Holliday Construction Co., Beaumont, Tex., in building hollow-wall houses of dry rammed concrete for sale to veterans at moderate cost. The forms, which first proved their worth 10 years ago, are used for progressive construction of the hollow walls in successive lifts 10½ in. high. A crew of three men

with a single form unit builds each course, section by section, releasing the form and moving it ahead to the next set-up as soon as each filling of tamped, dry concrete is completed.

Total thickness of the walls is 10½ in., including a 2½-in. air space between two 4-in. solid-concrete walls. Reinforcing consists of vertical ⅜-in. dowel rods 20 in. long set 2 ft. c. to c., and ¼-in.

MOVABLE STEEL FORM (below) 5 ft. long for hollow concrete wall is released by raising handle and is moved ahead by three men to next section. Wall is built up of two 4-in. solid concrete sections separated by 2½-in. air space.



LOW
locked
hinge

horiz
each
are ti
space
center
phalt
densat
rough
pleted
waterp

Simple
Movab
hollow
wall p
frame
nism at
form a
at the
leases t
section,
dle dow
of the w
ation) l
section,
forms a
For st
crew us
short pi
at the e
units are
A thr
building



LOWERED INTO PLACE for next section of wall, form will be locked in position by pressing down on handle which operates hinged lever mechanism at both ends of form.



WOODEN HAND TAMPERS pack no-slump concrete into form locked securely against lower lift of concrete previously placed.

horizontal bars $10\frac{1}{2}$ in. c. to c. in each wall section. The two sections are tied together by $\frac{1}{4}$ -in. Z-rods spaced 12 in., with the exposed center length, dipped in hot asphalt for protection against condensation. For exterior finish, the rough concrete surface of the completed wall is covered with 1-in. waterproof stucco.

Simple Double Steel Forms—Movable forms for building the hollow walls are simply four steel wall plates mounted in a steel frame with a hinged lever mechanism at each end for collapsing the form assembly. Raising a handle at the top of the form unit releases the form from a completed section, and pushing the same handle down to closed position (out of the way of the concreting operation) locks the form on a new section, ready for filling. The forms are open at both ends.

For straight runs, the concreting crew uses a 5-ft. form. To build short pieces and fill in the gaps at the end of straight runs, shorter units are available.

A three-man crew, two men building wall courses and one

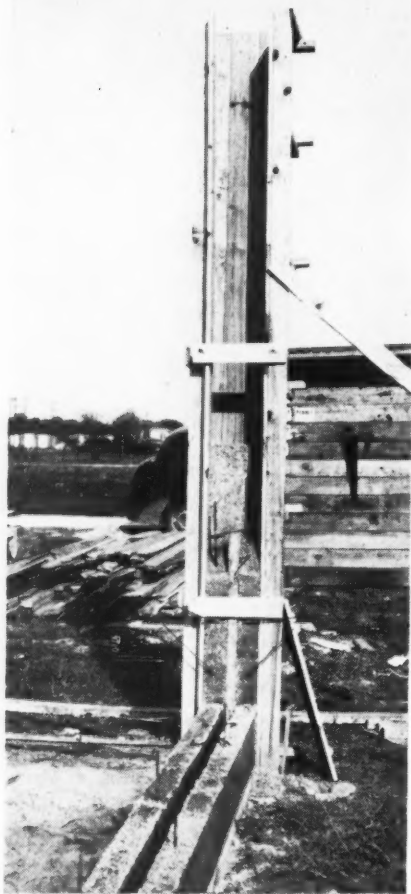
wheeling concrete, can complete 70 form fillings in 8 hr., equivalent to more than 200 sq. ft. of wall. All three men assist in moving the form.

Concrete for the walls is a no-slump mix proportioned by vol-

ume. It is a 1:2:4 mix, the coarse aggregate being one-fourth stone and three-fourths gravel, both $\frac{3}{4}$ -in. maximum size. This mix is tamped solidly into the form with wooden hand tampers. A rough, sloping surface is left at the open

VERTICAL DOWELS (below) 20 in. long are inserted in freshly tamped concrete of each 4-in. section to tie the horizontal courses together.





CORNER COLUMN concreted in advance of wall courses contains 2½-in. core of insulating material. On wall concrete in front of column are two Z-shaped rods used to tie two wall sections together.

end of the form for bonding to the next section.

For complete insulation, a 2½-in. space between the concrete withes is desired through all portions of the wall, including the corners. To speed construction, corners are concreted in advance in wood forms, using Thermax batts as the 2½-in. insulation. A photograph illustrates this detail.

Foundation walls 12 in. thick could be built with the movable wall forms, which are convertible for this service, but the builder makes better progress by constructing the foundations with wooden forms. For the floor of the house, a 4-in. slab of 2,000-lb. transit-mix concrete is laid on paper on top of a 16-in. sand-loam fill compacted by inundation. Finish flooring at present is asphalt tile, but hardwood will be used when it becomes available, the flooring then being nailed to 2x2-in. screeds laid in hot asphalt on the concrete.

Built to sell to G.I.'s for \$7,985, including a separate garage and driveway, the houses are five-room dwellings with overall outside di-



COMPLETED CONCRETE WALLS support roof frames covered by sheathing and composition shingles. Rough concrete exterior will receive 1-in. waterproof stucco finish.

mensions 33x47½ ft., inclosing 1,275 sq.ft. inside the walls. Three of the rooms are bedrooms. The dwellings are single-story, gable-roof bungalows, with ventilating louvers in the gable ends of the unfinished attics. Roofing is composition shingles on wood sheathing. Included in the selling price is a 60x120-ft. lot, all utility connections, and interior finish and fixtures except kitchen range and refrigerator. The houses face on shell streets in a new development near Lamar Junior College in the south part of the city.

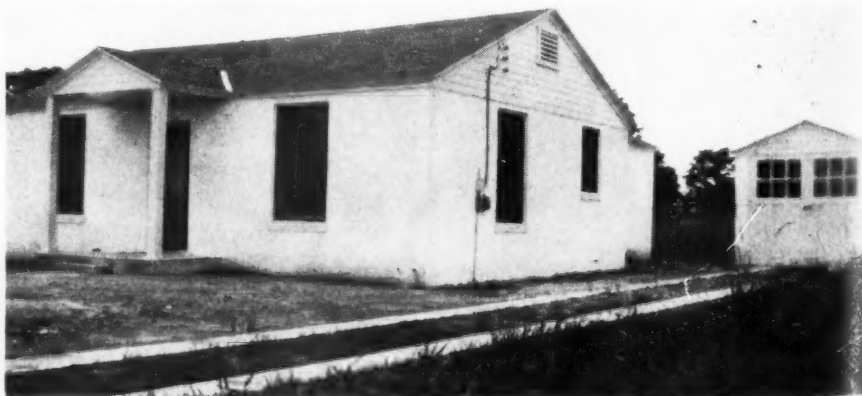
Interior finish on the concrete walls of the house is cement mortar, plastered on the rough concrete and painted after it has dried. Partitions are 2x4-in. stud framing finished either with gypsum board or gypsum lath and plaster. Metal lath is used at the corners. Ceiling finish is the same as that on the partitions. The kitchen and bathroom have Keene cement wainscots.

Walter L. Holliday directs con-

struction of the houses by the Hall-O-Way method for the Holliday Construction Co. Himself a veteran, he is endeavoring to build houses at reasonable cost for G.I.'s. He is assisted by S. Perry Brown, his former chief when Holliday worked for the Brown-Lane Co., Beaumont, before going into the Army Air Corps. Maurice L. Lefler, co-owner of the Holliday Construction Co., also was employed by Brown-Lane before he went into defense work during the war.

Movable steel forms used in the present program were fabricated 10 years ago for Mr. Brown and were used to build four hollow-wall concrete houses which are in generally good condition today.

Since the Holliday Construction Co. started its housing program, much work has been done in perfecting movable steel forms by improving certain details to make the form more profitable to handle. The improved model of the form is now in production by the Allied Builders Service, Inc., Beaumont.



FIVE-ROOM HOUSE, stuccoed, painted, and finished for occupancy, sells for \$7,985 with 60x120-ft. lot. Garage and driveway are included in this price.

Tractor-Mounted Saw Speeds Land Clearing

A CIRCULAR SAW ATTACHMENT mounted on a wheel-type farm tractor and driven by power takeoff has proved useful for land clearing in the U. S. and 12 foreign countries. Designed for operation by tractors delivering 20-belt horsepower or more, the attachment and its supporting frame are mounted on the tractor with the saw, of either 48- or 60-in. dia., located at the front and to the left, in full view of the operator. Although normally operated in horizontal position for land clearing, a universal joint in the drive shaft permits 22½-deg. tilting upward, as well as the same degree of movement forward or backward. In addition, a crosscut stabilizer allows the saw to be operated in vertical position for cutting up felled logs.

Designed to fell brush, shrubs and small trees up to 4-in. dia. while the tractor is moving forward in low gear, the unit can take care of larger trees by pressing forward against the tree with a dozer bar at the top of the frame while the operator feeds the saw

CIRCULAR SAW ATTACHMENT mounted on farm-type tractor and driven by power takeoff cuts brush and trees up to 4-in. dia. as tractor moves ahead in low gear. Dozer bar at top of frame presses against tree as saw blade bites into wood. Unit can be equipped with either 48- or 60-in. saw. Trees of large diameter can be cut by controlling saw from operator's position on tractor, making more than one approach to tree if necessary.

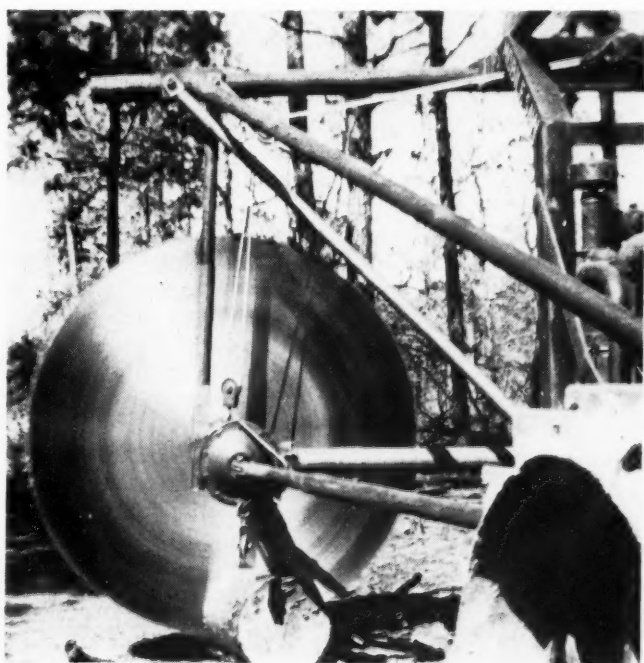
blade through the tree by means of a control located near his seat on the tractor. Trees of a diameter greater than the capacity of the blade can be felled by making two or more approaches with the unit.

Time consumed in felling timber is used principally in moving from tree to tree and making proper approach, rather than in the actual sawing operation. Average cutting time for felling a 12-in. tree is about half a minute, but it may take 5 min. to work out an approach to the tree.

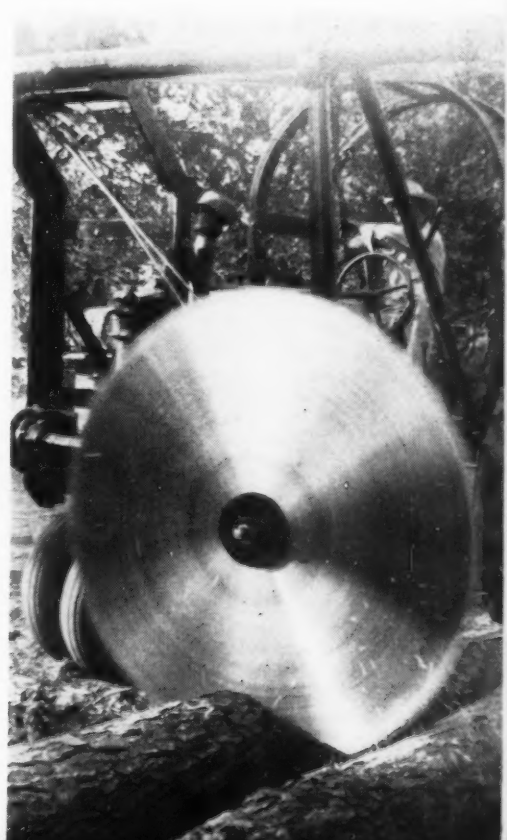
Acreage cut in a day depends on many factors, such as the kind of brush and trees, the density of the stand, the nature of the land

and the skill of the operator. Mowing small trees of 4-in. dia. and less on level ground, one user has cleared 2½ to 4 acres per day. Clearing brush which is not too high, the unit has cut up to 10 acres per day.

For tractors not equipped with independent clutch control of the belt power takeoff pulley used to drive the saw, the attachment can be obtained with a built-in clutch which gives the desired independent control over the saw blade. The built-in clutch is recommended by the manufacturer, Tips Engine Works, Austin, Texas, for all operations which call for a large amount of tree felling.



← →
USING CROSS CUT STABILIZER, saw attachment can cut up felled timber into desired lengths. Ball bearing universal joint in drive assembly allows saw to be raised through 22½-deg. range for crosscutting work as well as for ordinary land clearing operations.





DUSTY ROADS like this not only hinder efficient operation of high-speed equipment, but also cause bad accidents. Water wagons or some similar means of sprinkling should be used to keep haul roads free from this condition.

Let us assume, for example, a 1,000-ft. one-way haul with a total yardage of 500,000 cu. yd., to be moved with units possessing a speed of 8.5 mph. on a poor road and 14 mph. on a good road.

PRODUCTION

	Poor Road	Good Road
Fixed Time	3.0 min.	3.0 min.
Travel Time	2.7	1.6
Cycle Time	5.7 min.	4.6 min.
Trips per 50-min.-hr.	8.8	10.9
Loads per trip	12 yd.	12 yd.
Production per hr.	106 yd.	131 yd.

COSTS

Assume one pusher tractor is required for 3 scraper units in each case.		
Scraper Costs per hr. @ 6.00	\$18.00	\$18.00
Pusher Costs per hr.	5.00	5.00
Motor Grader Costs per hr.		3.50
Operating Costs per hr.	\$23.00	\$26.50
Production per hr.	318 cu. yd.	393 cu. yd.
Cost per yd.	\$0.072	\$0.067
Total Operating Cost for Project	\$36,000	\$33,500
Time to Complete Project	1,570 Hours	1,270 Hours

The difference in production and costs becomes even more startling as haul distances lengthen. On a 5,000-ft. one-way haul, for instance, the following figures apply:

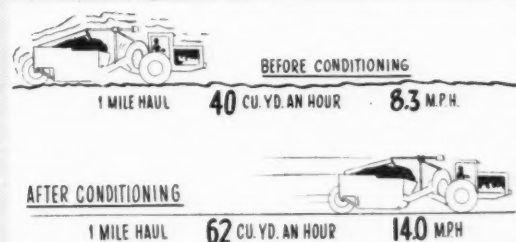
PRODUCTION

	Poor Road	Good Road
Fixed Time	3.0 min.	3.0 min.
Travel Time	13.3	8.1
Cycle Time	16.3 min.	11.1 min.
Trips per 50 min.-hr.	3.1	4.5
Load per Trip	12 yd.	12 yd.
Production per hr.	37 yd.	54 yd.
Scraper Units Required for One Pusher Tractor	8	6

COSTS

Scraper Costs per hr.	\$48.00	\$36.00
Pusher Costs per hr.	5.00	5.00
Motor Grader Costs per hr.		3.50
Operating Costs per hr.	\$53.00	\$44.50
Production per hr.	296 cu. yd.	324 cu. yd.
Cost per yd.	\$0.179	\$0.138
Total Operating Cost for Project	\$89,500	\$69,000
Time to Complete Project	1,690 hr.	1,540 hr.

(Continued on page 168)



MAINTAINING good haul roads results, as shown, in greater speed and production, as well as in greater operator efficiency through lessened fatigue.



JOB PLANNING on large projects sometimes justifies construction and maintenance of all-weather haul roads. Motor graders keep crown on roads for drainage, and scrapers use blades on return trips to help keep road smooth and level.

Accounting for Contractors

SECOND OF A SERIES OF SIX ARTICLES BY GUY M. CARSON, COMPTROLLER

CASH PAID OUT

DATE	CHECK NO.	PAYEE	1 AMOUNT OF CHECK	2 DISCOUNT TAKEN	3 TOTAL AMOUNT	4 DIRECT PAY-ROLL AND COMMISSION	JOB NO.	5 SUB-CONTRACTORS	6 MATERIALS	7 DELIVERY AND FREIGHT EXPENSE	8	9 MISC. JOB EXPENSE	10 INDIRECT LABOR
194-													
Apr 1	201	Bldg Supply Co - Lime	98.00	2.00	100.00		10		100.00				
" 1	2	M. Andre - Arch	125.00		125.00		10	125.00					
" 1	3	City of Ashton - Permit	20.00		20.00		10					20.00	
" 1	4	Mosley Excavating	75.00		75.00		10	75.00					
" 1	5	Harlow Bros - Found.	300.00		300.00		10	300.00					
" 1	6	J. Harlow, prof. pers.	175.00		175.00								
" 1	7	Payroll	267.57		267.57	20/27	-						38.80
" 4	8	West Light & Gas	7.00		7.00								
" 4	9	H. & R. Ry. Co - Fret	71.50		71.50		10			71.50			
" 4	10	Harmon Realty Co. Rent	75.00		75.00		-						
" 4	1	Currency for Petty Cash	10.00		10.00								
" 10	2	1st Natl Bank note	1010.00		1010.00								
" 10			-0-		-0-								

IT IS AXIOMATIC that contractors, the same as most other business men, must spend money to make money. In fact, contractors must always spend money whether they make any or not. Good business practice dictates that the contractor keep an accurate record of his expenditures; current income tax laws demand it.

Therefore, as long as the contractor must keep an expenditure record, he might as well keep one that means something and which will help him both save and make money. This second installment of the six-article series on Accounting for Contractors will be devoted entirely to the important subject of expenditure record keeping. Subsequent articles will discuss other phases of accounting in step-by-step methods.

The accompanying illustration shows a Cash Disbursement Record laid out in such a manner that the expenditures (cash disbursements) can be recorded to give you profitable information, which ordinary accounting systems do not always supply. While the accom-

panying forms are taken from the TARCO Simplified Accounting System for Contractors, any set of books providing the necessary information and tying in with other records may be used.

Any record to be of real value must be accurate. To keep an accurate record, all disbursements should be made by check, although for convenience a Petty Cash fund should be maintained for small purchases. In the illustration the net amount of the check is entered in the first column. Discount, if any, is entered in the second column and the total amount of the bill is entered in the third column. The total of Col. 3 should equal total of Cols. 1 and 2. All expenditures are, therefore, in Col. 3. To classify and segregate these expenditures from Col. 3, everything in that column is distributed in subsequent columns on the same double page form.

For example: For a shipment of materials purchased for Job No. 10, the proper entries are made in the first columns, the distribution made in the "Materials" Col. 6 and

the number of the job or project should be placed before the amount in the "Job No." column. The purpose of this method is two-fold: To keep expenses by classifications, and to keep direct expenses keyed by jobs.

One cardinal feature of the recently developed "Accounting System for Contractors" is that each project is identified with a job number. Thus, all direct expenses, direct payroll, and money received from any particular job are all keyed with the same number so that eventually all the information appears on the Job Record sheet (to be explained in another article) which bears this key number.

As you look over the Cash Paid Out Record shown herewith, you may wonder why most of the direct expenses in the typical entries shown in the illustration pertain to Job No. 10. This is for simplicity, as the contractor may, and probably will, have several jobs in progress at one time. Therefore, various job numbers would appear on the ordinary Cash Disbursements or Cash Paid Out page.

als or additional money put into the company by the proprietor would be handled in a like manner.

The foregoing are typical entries and cover usual transactions. All entries will be comparable to these, or variations of them.

Sometimes purchases are made for stock or reserve items to be distributed to one or more jobs later. In such cases, a separate column entry should be set up for Stores. Later, when the item is distributed to a specific job, the cost will be then noted on the Job Record Sheet (to be shown in a subsequent article). It is important, however, to record the cost of such purchases *when made* on the expenditure sheets shown here; otherwise, your cash expenditure accounts will not balance.

The same procedure is carried out for purchases of equipment, repairs and spare parts. Some contractors charge such costs direct to the job; others carry a general equipment cost record. If the item is not chargeable direct to a job when purchased, the expenditure record should list it under a separate column of equipment charges or under Other Expenditures. Again, it is important to list on the form shown here every item of expenditure when that item is purchased.

Review of Entries

Summarizing briefly some of the statements made earlier in the article, you notice that all direct operating job expenses are grouped in Cols. 4 to 9 inclusive, your indirect operating expenses in Cols. 10 to 13, inclusive, and your office overhead expenses in Cols. 14 to 18 inclusive, while your personal drawing and other transactions are handled separately in Cols. 20 and 21.

All entries are made in this manner until the bottom of the page is reached, when all columns should be totalled.

If your book is in balance, the total of the third column will be the total of your first and second columns, and the total of the third column will also be equal to *all* of the other columns to the right of it because they are distributions of Col. 3. After being sure your sheet is in balance, you carry forward the totals to the next page, continuing this operation until the end of the year. Carrying totals forward for the entire year is preferred by many.

This arrangement has many obvious advantages. For example, you do not have to make constant postings to a General Ledger; you have only to use the footings of the various columns to obtain quick information which might otherwise take hours to procure. You can carry these totals forward from month to month and at the end of the year you have your expenses, all totalled and ready for Income Tax. (The footings may be posted monthly to a ledger account, if desired.) But in either case, obtaining expenses for Income Tax is no longer a nightmare.

Direct Costs Are Under Control

Be sure to enter your *direct* job expenses in Cols. 4, 5, 6, 7, 8 and 9; that is, all expenses which are direct expenses of certain jobs. These expenses, except payroll which is entered from Payroll Record, must then be entered on Job Record sheets bearing same "key" or job number.

The indirect expenses, office and other expenses, should be entered in appropriate Cols. 10 to 21. These costs, which are those not applicable to actual jobs, are overhead expenses and are *not* charged directly to jobs, but must be kept separate so that the contractor may know his overhead, that is, what it costs to be in business.

The successful operator must know the percentage of indirect or overhead operating and office expense, to *direct*, operating expense. The competitor who does not know this percentage is the one who makes the ridiculous bids. He makes himself and his competitors look bad. He loses money when his bids are too low, and he loses jobs when his bids are too high. When accounts are kept as outlined above, the "percentage" of Indirect, or overhead expense, to *Direct* expense, is easily determined.

It is obtained by taking the total direct operating job expenses, which are the totals of Cols. 4 to 9 inclusive, and dividing this total into the Total Indirect, or Overhead expenses (totals of Cols. 10 to 18 inclusive), for the same period. The longer the period of time covered, the more comprehensive and accurate this percentage will be. For example, the period should include at least a 3 months' period in which O. A. B. and Unemployment Taxes are paid

and entered in Cash Disbursements. A six months or twelve months period is better still. When this percentage is obtained it gives the operator knowledge of the percentage which must be added to direct operating (job) expenses to recover overhead expenses. Knowing your expenses or costs, you can then add a percentage for profit.

Do YOU know what YOUR percentage of Indirect and office overhead expenses is to your Direct Job expenses? If not, you are operating by guess. Operating by guess in these days is dangerous business. It is impossible to over-emphasize the importance of the above. Percentages should be checked periodically. It is *very* important. It enables you to:

(1) Check expenses by comparing them with those of the previous period (and sometimes reduce the controllable ones).

(2) Use those overhead percentages in your estimates to make sure that you are covering your cost of doing business, indirect as well as direct, in your bids.

If your estimates are correct and you have the right percentage for overhead, the figure which you add for profit means something. It means that you are operating on the right basis. If your estimates are correct in the first place, you should obtain your share of jobs, make money, and stay in business.

Advantages of System

This new "Accounting System for Contractors" opens up several other avenues not provided by ordinary bookkeeping systems. Such an arrangement has many advantages for providing useful information. It is, as the reader has seen, easy and simple to keep. You'll like this new method of keeping your record of Cash Disbursement, and when income tax time comes around—you'll be *more* than pleased with it.

The benefits which accrue from this practical, yet simple, system of accounting for your Cash Disbursements find equal expression when applied to Cash Receipts, Job Records and Payroll.

There's safety and certainty when you can be positive that your estimate is not a "Guess-timate" and that your costs of every description, plus your profit, are a part of those estimates. Yes, there are Profits in Practical Accounting.

LEGAL ADVENTURES

of TRACTOR CONN



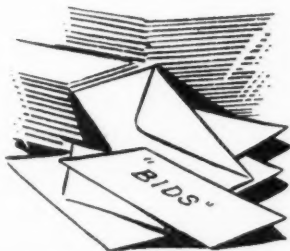
By LESLIE JOBB

No contractor ever tries to be his own dentist or his own shoemaker. It is even more dangerous for him to be his own lawyer. There are, however, some legal rules which every contractor should know, and these rules may be explained in plain English without resorting to the jargon of the law, unintelligible to most laymen.

This series of articles, dealing with the Legal Adventures of Tractor Conn, a typical contractor anywhere in the United States, explains some of these legal points in plain language for the contractor. Each one is based on an actual decision of an American Court.

The Case of the Structural Iron

"I am inclosing herewith my sealed bid on your new church, together with my certified check for \$1,000," Tractor Conn wrote. The bids were opened in due time and Conn's for \$30,973 was found to be about \$3,900 below the next highest bid, so he was duly notified that his bid had been accepted.



Before Conn was done congratulating himself, the stenographer who had made up the estimate confessed that the cost of the structural iron required by the building, estimated at \$2,350, had been omitted by her in adding up the estimates.

Tractor Conn promptly reached for the telephone, called up the church building committee, and explained the situation.

"We'll hold you to your contract," the committee maintained.

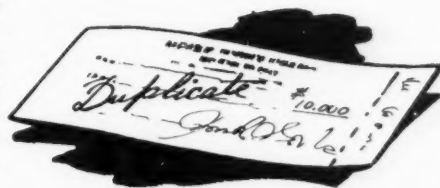
"And I'll stop payment of my certified check," Conn threatened.

The courts are not uniform on this point, but the same situation arose in a Minnesota case reported in 160 N.W. 500, where the Court ruled in favor of Tractor Conn.

"The question here is whether a mistake of more than \$2,000 in the bid upon the construction of this church is merely incidental or fundamental. We think the amount is so large that it is unreasonable to suppose that Tractor Conn would have made the bid he did make, if he had known that the structural iron work was not included therein. Here the finding is that it was an honest mistake, made without negligence. The building committee was apprised of the error at once. No intervening rights accrued," said the Court.

The Case of the "Duplicate" Check

Tractor Conn bought a carload of cement and paid the dealer by check. The check was lost and Conn issued another with the word



"duplicate" written in red ink on the face.

A few days later the duplicate check was paid by the bank on which it was drawn and the original check, purporting to be endorsed by the cement dealer and a certain John Doe, was cashed at the Popular Bank. The Popular Bank presented the check to the local bank and, through an oversight, the check was paid. Then the local bank discovered that it had paid the same check twice and also learned that the dealer's endorsement on the first check was a forgery.

"You have to make good to me, and sue the other bank, if you like," Tractor Conn declared. The local bank sued the Popular Bank and the Oklahoma Supreme Court ruled that the local bank had no case, on account of its carelessness in paying the first check.

"Under the testimony offered, it is shown that, in banking circles the marking of a check as a duplicate has the effect of serving notice under the drawee bank that an original of said instrument has been executed and not to honor both instruments," was the reasoning of the Court.

**More Legal Adventures of
Tractor Conn Next Month**



EXCAVATION for diversion and forebay channel around left end of Davis Dam involves cuts ranging up to 220 ft. deep. Here bench method of excavation is being used on one of deeper cuts.

Preliminary Work Gets Under Way at DAVIS DAM



TYPICAL LINE-UP OF EQUIPMENT takes place in yard just below dam when shifts change and motor vehicles get any minor service needed between shifts.

WORK ON THE \$21,000,000 contract for the construction of Davis Dam by the Utah Construction Co. went into high gear this summer with the major item being excavation for the 60,000-sec.-ft. capacity diversion and forebay channel. More than 1,000 men are now on the job for Utah on this 4-yr. contract for building a 4,400,000-cu. yd. earth-and-rockfill dam, a

Page 98

PRECIOUS LITTLE FLAT SPACE (below) was provided by nature along Colorado River below Davis Dam but with rooters and carrying scrapers Utah Construction Co. is making a lot of it for shop areas, office and living quarters.



TIME
be u

225,
4,50
chan

Lo
64 m
mi. a
is 34
King
Davis
the
but
twer
from
dam
(1,75

In
dam,
cance
ducti
Bure
plete
1946
bidde

Th
000,0
mater
three
range

LONG
big job
several
sketch
for con
reau, c
trict III
some 3
of conc
and spi
firms o



TIMBER TRESTLES bridge Colorado River at three points just below dam for use in construction operations. One nearest dam will be used largely by trucks assigned to excavation.

225,000-kva. power plant and the 4,500-ft. diversion and forebay channel.

Located on the Colorado River 64 mi. below Boulder Dam and 75 mi. above Parker Dam, Davis Dam is 34 mi. from the nearest town, Kingman, Ariz. When completed Davis Dam will be far from being the largest dam in the country, but it will rank among the first twenty in the United States, both from standpoint of volume of the dam and capacity of the reservoir (1,750,000 acre-ft.).

In 1942 Utah started work on the dam, only to have the contract cancelled because of a War Production Board order. The U. S. Bureau of Reclamation let a completely new contract in February 1946 to Utah, the lowest of four bidders.

The Utah contract includes 15,000,000 cu. yd. of earthwork (some material will be handled two or three times) and the bid price ranges from 10c. a yard for rock

screenings in the dam embankment to \$30 a yard for excavation in tunnels and shafts. Also included is some 455,000 cu. yd. of concrete work. The bid price per cubic yard on this ranges from \$8.90 for concrete in the massive sections of the intake structure to \$67.50 for concrete in the superstructure of the power plant.

The contract held by the Utah Construction Co. is the major part of the Davis Dam project which, it is estimated, will cost some \$77,000,000. The main object in building this project is power generation, but the dam will also be used as an afterbay dam for Boulder Dam to provide better control of the Colorado.

The construction sequence is regulated by the design. The first step, now under way, is the excavation of the diversion and forebay channel with materials being stockpiled for later use in the dam. Next will be the concrete lining of this channel, expected to get

under way this winter. Some 1,070 ft., from 75 to 200 ft. wide, will be lined to depth of 150 ft. with an average thickness of 18 in. As the channel walls are relatively steep ($\frac{1}{2}$ to 1 slope), the channel lining is considered to be one of the project's most difficult construction features.

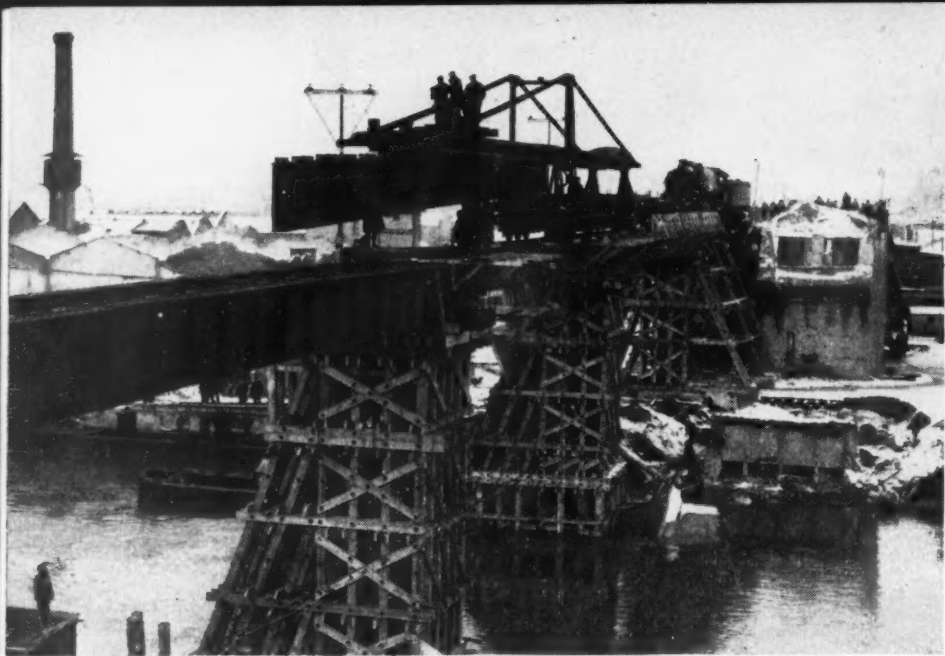
The third step in the construction program will be diversion of the river, not expected until 1948. The final step will be excavation for and building of the dam itself.

In addition to the excavation, early work by Utah included three pile trestle bridges across the Colorado, housing for more than half the crew, shops, offices, construction roads and other necessary facilities.

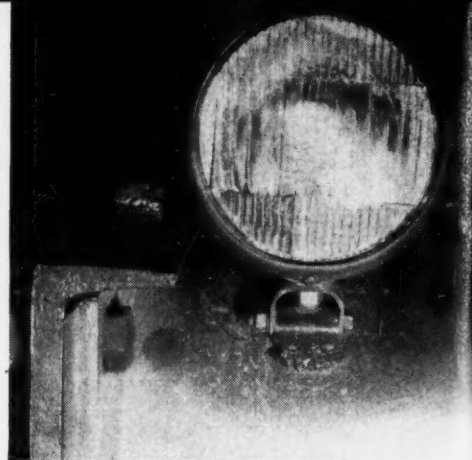
Included in Utah's staff of men with long experience on construction work are H. E. "Ernie" Williams, project manager; T. L. "Ted" Terry, general superintendent; and Jack Lloyd, excavation foreman.

LONG WAY TO GO. Davis Dam, U.S. Bureau of Reclamation's big job below Boulder on Colorado, has been started but it is several years away from completion to maximum section (right) sketch of which is held here by H. E. WILLIAMS, project manager for contractors, H. F. BAHMEIR, construction engineer for Bureau, and L. R. DOUGLASS, assistant director for USBR District III at Boulder City, Nev. Before embankment can be started some 3 million cu. yd. must be excavated and 450,000 cu. yd. of concrete placed in combined diversion channel, control works and spillway. Utah Construction Co. heads group of western firms on job.





CANTILEVER BOOM on erection car is able to place 100-ft. steel girders for repair or replacement of war-damaged railway bridges in France. Equipment is here shown placing steel member in bridge at Nevilly-Sur-Marne. Launching boom extends 50 ft. beyond end of car having two trucks of three axles each, weighted at rear end.



LAMP BRACKET LUG is welded to body of construction equipment to carry floodlight for increasing effectiveness and safety of earth-moving operations at night, recently tested by Army's Engineer Board at Fort Belvoir, Va.

HOW

They Did It

CONSTRUCTION DETAILS

*For
Superintendents and Foremen*

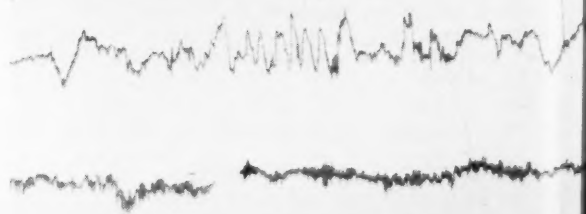
Page 100



SHEET STEEL CHANNELS pinned together make sturdy box forms for concrete steps. Devised by Adam Pollman, Milwaukee building contractor, forms can be erected in 15 min. and are adjustable for various depths and widths of tread.



ROUGHNESS OF PAVEMENT on Oakland, Calif., street is recorded by 16-wheel Profilograph (left) in preparation for repair and maintenance work. It was designed by F. N. Hveem, senior physical test engineer of state highway department. Top graph (below) shows surface inequalities in street that has not been repaired and lower line is of same section after work has been done.



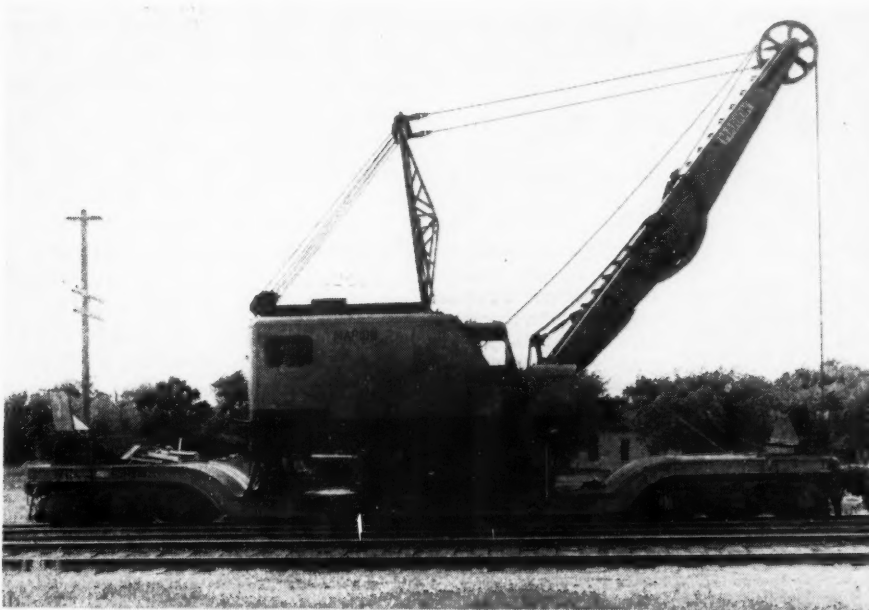
CLEAR
place
oper
supp

SPECIAL
Green
tracting
contract
job. H

CAGE
from in
Balleng
clears



CLEANING UP OF INVERT of 7-mi. El Mirador irrigation tunnel in Mexico prior to placement of concrete lining is done with bulldozer blade on Caterpillar diesel tractor operated by Constructora Rosoff, S.A. Concrete curbs are first poured against walls to support rails for invert bridge.



SPECIAL RAILWAY CAR built by the Greenville Steel Car Co. for Western Contracting Corp., Sioux City, Iowa, transports contractor's big Marion shovel from job to job. Here rig is being unloaded for firm's

Kanopolis (Kan.) dam project. After cab and lower frame have been jacked up to receive crawlers, rig rolls off under its own power over earth ramp bulldozed up to low car level.

Britten Photo

CAGE OF METAL BARS (below) protects operator in cab of Caterpillar diesel D8 tractor from injury by underbrush and tree branches while clearing mesquite-covered land for Ballenger Construction Co., Inc., of San Benito, Tex. Tractor, equipped with treedozer, clears average of 15 acres of heavy growth in 10 hr.

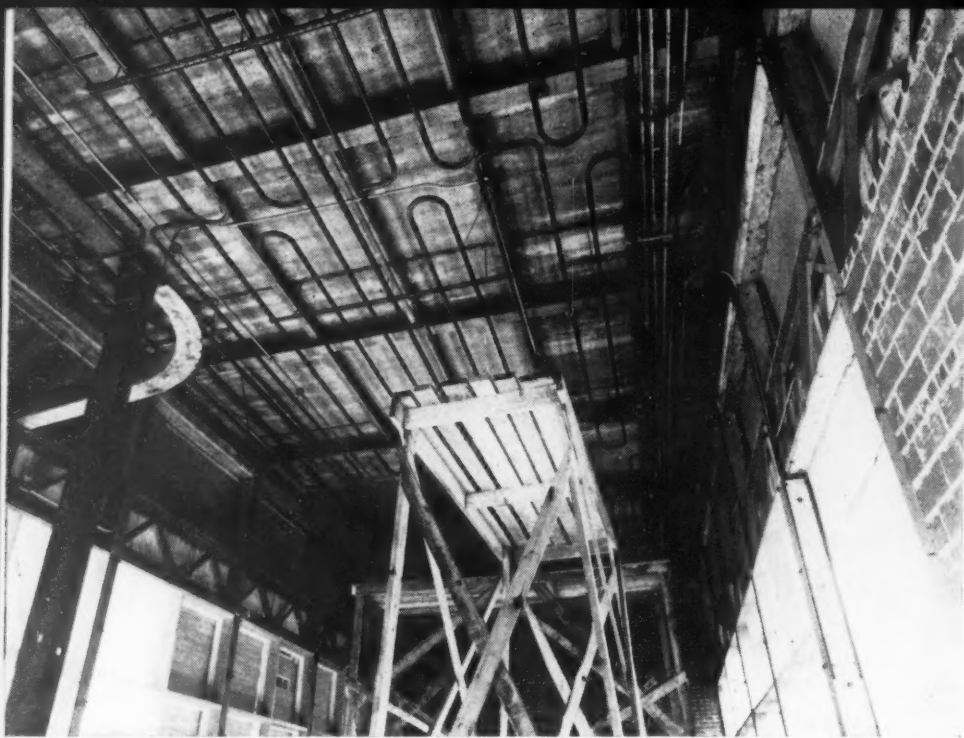


ALL-PLYWOOD SILO, first of its kind, is erected on farm near Portland, Ore. It is 12 ft. in diameter and 30 ft. high, weighs approximately a ton and will hold 76 tons of ensilage.

Page 101

ELECTRIC ARC WELDING (below) joins members of high-head steel section of 41-mi. Salt Lake Aqueduct line to be laid under Provo River in Utah. Members are held together for welding by Simplex Util-A-Tool, push-pull unit of 10-ton capacity.



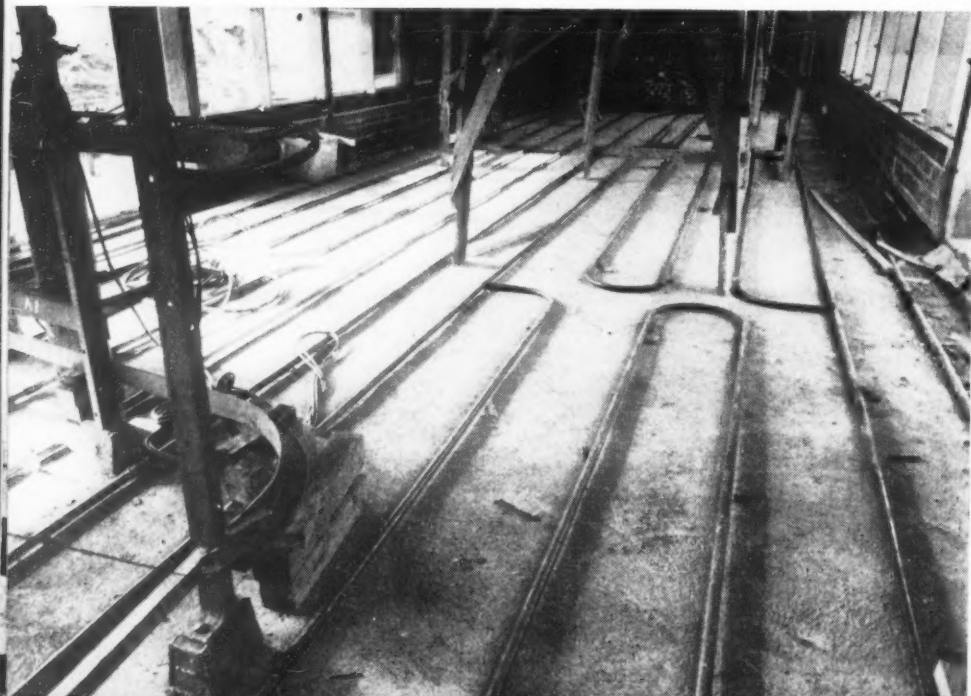


CEILING COILS for radiant heating in C.&O. station at Prince, W. Va., are 1¼-in. wrought iron pipes hung from concrete roof slab. They are covered with accoustical-treated perforated metal ceiling. Pipes are spaced 1 ft. apart.



Page 102

FLOOR COILS (below), of 1-in. wrought iron pipe spaced 18 in. apart, are embedded in sand and covered with concrete and terrazzo flooring. Concrete 4-in. slab is laid on ground, as building has no basement.



← **MODERN ATTRACTIVE** station features radiant heating, upholstered furniture, wide picture windows and long concrete platforms and canopy.

C. & O. Puts RADIANT HEATING

in Ceiling and Floor of New Station

FIRST APPLICATION of radiant heating to railroad stations is in the Chesapeake & Ohio's new depot at Prince, W. Va. To heat properly the main waiting room, 20x55 ft. and 17 ft. high, the railroad also installed pipe loops in the ceiling.

Upper coils, of 1¼-in. Byers wrought iron pipe spaced 12 in. apart, are hung from hangers between a perforated metal ceiling carrying a 1-in. sound-absorbing material and the 4-in. concrete roof slab. Above the roof slab is a 2-in. layer of Foamglas insulation, topped by tar and gravel.

Floor coils are 1-in. wrought iron pipe placed on 18-in. centers. The pipe is embedded in 1¼ in. of sand on top of a 4-in. concrete floor slab, covered by concrete and sectional terrazzo flooring. There is no basement under the building.

Two-Zone System

The heating system is laid out in two zones, each with separate supply and return pipes. One zone serves the waiting and rest rooms, the other heats the 20x35-ft. baggage rooms. Hot water for the system is supplied by a stoker-fired coal boiler in a service room off the baggage room. Water is forced through the two zones of pipes by circulating pumps controlled by thermostats. Air vents in the top coils prevent air locks.

The railroad regards the new modern depot as the "vest-pocket" model for stations in the future. It is equipped with fluorescent lighting, upholstered benches, wide windows and photomural walls. Concrete platforms and canopy extend 500 ft. in front of the building. The station was built by John P. Pettyjohn & Co., Lynchburg, Va., for Garfield, Harris, Robinson & Schope, architects, Cleveland, Ohio.



JACKING CREW prepares to inject asphalt beneath California concrete highway slab made unstable by pumping of subgrade. Two asphalt kettles, one for preheating and one for heating and pumping, are mounted on trailer.

Asphalt Subsealing of Concrete Pavements

By **H. L. COOPER**

Assistant Maintenance Engineer, California Division of Highways

ROCKING AND PUMPING of concrete highway slabs where the subgrade has subsided beneath the pavement is successfully stopped by forcing liquid asphalt under the working slabs. Asphalt jacking under unstable California highway slabs has proved more efficient than the older method of mud jacking with soil-cement mixtures because the tight, waterproof seal formed by the asphalt beneath the concrete pavement prevents the entrance of surface water.

Holes are drilled through the slab to be stabilized, and free water encountered beneath the pavement is blown out with compressed air. Airblown asphalt, penetration 20-30, heated to 350 deg. in trailer- or truck-mounted tanks, is used for jacking. An injector nozzle, driven into the hole in the slab, is connected through a 1-in. metal hose to a gear pump mounted on the asphalt kettle. Asphalt is then pumped under the slab at pressures from 20 to 40 psi. until it

appears through adjacent cracks or until a pavement rise is indicated on an Ames dial mounted at the slab edge. Upon withdrawal of the nozzle a wooden plug is driven into the hole to prevent the hot asphalt from extruding.

From 7 to 11 gal. of asphalt is required for each hole, and most California highway district crews have treated from 100 to 130 holes per day at an average cost for all labor, equipment, and materials of only \$2.50 per hole.

Page 103

EXPANDING-TYPE INJECTOR (below) fits tightly in 2¼-in. hole drilled in slab. Nozzle is 2-in. metal hose expanded by turning screw wheel upon which operator stands. Sand is sprinkled to blot any asphalt that may exude.

INJECTOR OPERATOR (below) wears gloves, leggings, and plastic mask to prevent burns from 350-deg. asphalt. Operator's weight is sufficient to hold injector in place since asphalt is forced under slab at low pressure of 20 to 40 psi.

WEDGE-TYPE INJECTOR (below) has tapered pipe nozzle wedged with burlap or paper into 1¼-in. slab cut. Return line to kettle permits hot asphalt to circulate through system between injections to prevent solidification in hose.





SIDE SLOPES OF RAILROAD CUT are reduced to $2\frac{1}{4}$:1 to prevent earth slides. Northwest machine (left) trims lower slope from shelf previously excavated in side of cut, while Page dragline (right) completes slope flattening. Tractor-scraper unit assists in stockpiling spoil in 30-ft. berm behind top of slope.

Steep Railroad Cut Slopes Flattened by Dragline Sidecasting

ROBERT BARNARD (left), in charge of the excavation project for Barnard-Curtiss Co., talks it over with JACK POORE, superintendent for Foley Bros.



STEEP SIDESLOPES along a 10-mile section of the Burlington railroad tracks between Frederick and Vermont, Ill., were flattened to prevent the occurrence of earth slides that frequently disrupted traffic. Slopes as steep as $\frac{1}{2}$:1 of cuts up to 85 ft. deep were successfully reduced by draglines operating from benches excavated in the sides of the cuts.

Since the steepness of slope and the limited working area made shovel or carrying-scraper operations inadvisable, four draglines were used to remove 700,000 cu. yd. of material in order to flatten the $\frac{1}{2}$:1 and $\frac{3}{4}$:1 sideslopes to $2\frac{1}{4}$:1. Three of the rigs, two Northwests and a P&H, were

equipped with $1\frac{1}{2}$ -yd. buckets; the fourth dragline, a Page, used a 2-yd. bucket. Although the machines had 65-ft. booms, the railroad cuts ranged from 50 to 85 ft. in depth and the contractor decided to trim the lower slope sections of deep cuts with draglines operating from benches part way down the slope.

A dragline on top of the slope cut the first bench about 25 ft. down, and another dragline on this shelf excavated a lower bench or trimmed the lower slope depending on the depth of the railroad cut. Only one bench was needed for a 65-ft. cut, while three were used for cuts that were 85 ft. deep. Excavated material was

passed up from rig to rig and was finally stockpiled in a 30-ft. berm at the top of slope. A bulldozer and two 12-yd. LeTourneau scrapers drawn by Caterpillar D8 tractors assisted in spoil disposal. Of the 700,000 cu. yd. of material removed, 70,000 cu. yd. were handled twice, or were double-cast, while 105,000 cu. yd. were triple-cast.

Dragline Operation

Draglines operated on a three shift, seven-day weekly schedule during the 18-month job and were serviced once each shift by portable maintenance and repair equipment. A major problem encountered was wire rope wear caused by inexperienced dragline operators and the high, heavy lifts. Life of drag and hoisting lines was materially lengthened by using 6x25 Lang lay preformed wire rope.

On almost every cast from the high benches, the full 75 ft. of rope on the drums would be thrown out and then reeled in. This meant unusually severe service for the wire rope since the cable would pile up on the drums instead of winding up in layers.

The slope flattening operations were completed in 18 months on a subcontract by the Barnard-Curtiss Co. of Minneapolis, Minn., with Robert Barnard in charge. Foley Bros., Inc., St. Paul, Minn., hold the contract for extensive line improvement for the railroad.



DRAGLINE ON BENCH flattens steep sideslope. Narrow railroad cuts up to 85 ft. deep made operation from successive benches necessary. Excavated material from 10-mi. project totals 700,000 cu. yd. of which 25 percent must be handled two or three times.

COMPLETED PORTION (below), of new 2 $\frac{1}{4}$:1 railroad backslope, at right, is designed to prevent earth slippage. At left of track is steep, eroded slope of original cut.



A FREE ECONOMY IS WORTH FIGHTING FOR

BUSINESS must take the initiative if the price decontrol machinery, set up by Congress, is to be effective. The present price control law is far more than a set of instructions to the administrators of OPA; it is a challenge to business to be aggressive in speeding decontrol decisions and in persuading the Price Decontrol Board to adopt a strong stand for return to a free economy.

Thus far business has not met this challenge. *Two months after the passage of the new price law not a single application for decontrol of a major product had been filed by an industry advisory committee.* This is due in part to the red tape controlling such applications. Nonetheless, a continuation of such inactivity on the part of business can well result in perpetuating price control far beyond the time either the present law or sensible economic policy require.

It was the clear intent of Congress to hasten our return to a free economy. In the legislation continuing the general control of prices, Congress formally declared its purpose to have it "terminated as rapidly as possible."

To accomplish this, the House originally approved a formula which would have made decontrol mandatory when production had attained a prescribed level. The automatic decontrol provision was dropped before the bill was finally passed, partly because of the uncertain effects of strikes on production. But Congress did not mean to return the timing and extent of decontrol to the administrative discretion of OPA.

On the contrary, to assure having price control "terminated as rapidly as possible," Congress created a Price Decontrol Board and gave it power to overrule OPA when the board finds price control should be removed. Moreover, it gave to industry the right and the responsibility to seek decontrol. Also, in a further effort to speed up the decontrol process, it placed narrow limits on the time allowed for board decisions.

Congress had compelling economic reasons for doing its legislative best to speed up decontrol.

1. It is by all odds the best way to eliminate the

bottlenecks in production and the black markets which have plagued the country since V-J Day.

Rigid price ceilings promote shortages of badly needed commodities by discouraging their production. Such shortages both upset the flow of production and promote black markets. At present a considerable part of American industry is stymied by shortage of critical parts and materials. Price control is much to blame.

2. There must be flexibility of prices if a round of new wage adjustments, which may be forced on industry early in 1947, is to be negotiated without grave risks of seriously curtailing production.

When, under the leadership of the national administration, the first post V-J Day round of wage adjustments was made, price ceilings were held rigid while wages were boosted. The result was a series of price-wage squeezes which upset production. They would have been disastrous if we had not been in a sellers' market, created by a tremendous accumulation of wartime shortages. In 1947, however, many industries will be in a buyers' market. It must be possible, therefore, to have wage increases reflected promptly in price adjustments if we are to avoid a repetition of the costly post V-J Day round of strikes, which often had price control as the key issue.

3. Rapid decontrol is necessary to maintain a high level of employment and production.

Almost five years of price control inevitably twisted the factors of production and distribution far out of the equilibrium which would prevail in a free economy to which it is the clear purpose of the nation to return. Unless the return to a free economy is facilitated by a speedy and orderly decontrol, the jolt of an abrupt return to competition can be expected to upset employment and production seriously.

It's Up To Business

To encourage speed and boldness in decontrol, Congress provided for the reimposition of control over any prices which, after being released, might

get out of hand. The dangers of this sort are chronically exaggerated. During the 25-day period in July when there was no price control the Civilian Production Administration found that "manufacturers of finished industrial and consumer products have generally exhibited commendable restraint in increasing prices no more than increased costs."

All of this endeavor to speed up decontrol and expand its scope is likely to be futile, however, unless business furnishes the driving power for the machinery Congress provided. OPA certainly will not do it. Neither can the Decontrol Board be expected to go out and drum up cases.

The necessity for vigorous action by business in pressing for decontrol is increased by the fact that the general legislative standards to guide decisions by the Decontrol Board are vague. They must be clarified and sharpened by decisions in specific cases.

The main principle to guide the decontrol of non-agricultural products is that price ceilings shall be removed when supply is in approximate balance with demand. But what precisely does that mean? The meaning will become clear only through Decontrol Board decisions.

The same is true of the principle which makes automatic decontrol of a non-agricultural commodity contingent on whether or not it "is important to business costs or living costs." Business must press cases which will give specific meaning to those vague terms if decontrol is to get on apace.

Cards Are Stacked

At present the government has the cards pretty well stacked against rapid decontrol.

First, the key members of the staff of the Price Decontrol Board are holdovers from the Bowles regime which emphasized the importance of carrying on price control rather than speed in getting rid of it.

Second, in exercising his authority to prescribe regulations to govern petitions for decontrol, the OPA administrator has required excessively complicated statistical and economic data. Manufacturers who are sure they can convince any fair-minded board of the desirability of decontrolling certain of their products assert that they are blocked by statistical entanglements.

Third, OPA has discouraged business from moving immediately under one section of the law to speed decontrol. This section provides that products "not important in relation to business or living costs" may be freed from price ceilings immediately and must be freed by December 31, 1946, unless OPA specifically finds they are important to these costs.

Instead of making it possible for business to move under this section now, OPA has issued rules which have the effect of blocking such a course until the end of the year.

In the light of obstacles such as these, it is not surprising that the record of decontrol to date is not impressive.

Decontrol Record

Since June 30 there has been a drop from about 70% to about 60% in the total value of products under price control. But most of the drop has been accounted for by food products, which Congress took the lead in decontrolling, and by industrial machinery which was being decontrolled when Congress acted. By far the larger part of manufactured consumer goods remains under control.

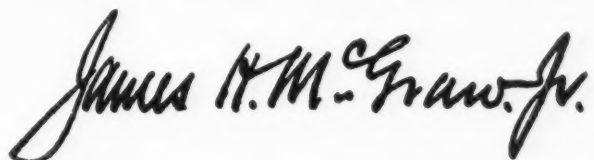
This, however, is no time for business to be discouraged. Rather, business should accept the obstacles put in its way as a challenge and work harder than ever for speedy decontrol.

The case for decontrol should not be stated in narrow technical terms. It should be based on grounds of broad public policy, and should demonstrate how a speedy return to a free economy can hasten the full release of the nation's productive power.

For example, there should be very clear demonstrations of how, in far too many cases, rigid price ceilings—(1) discourage production of key parts and materials by making such production relatively unprofitable, (2) create shortages of key parts and materials which tie up broad ranges of production or result in piling up lopsided inventories of partially completed goods, and (3) thus cut away the foundations of a stable economy and the prospects of steadily sustained employment.

There should be equally full demonstrations of the well known sequence from shortages to unrealistic price ceilings to black markets. Meat prices are rolled back, but the meat is rolled under the counter.

A free economy is worth fighting for. Liberty is preserved only by the constant struggle of those who believe in it. Neither the interests of the nation in a strong and well-balanced economy nor the interests of business itself will be served by drifting at this time. Now is the time for business to lead a strong offensive for speedy elimination of price control.



President McGraw-Hill Publishing Company, Inc.

THIS IS THE 51ST OF A SERIES

Present and Accounted For...A PAGE OF PERSONALITIES

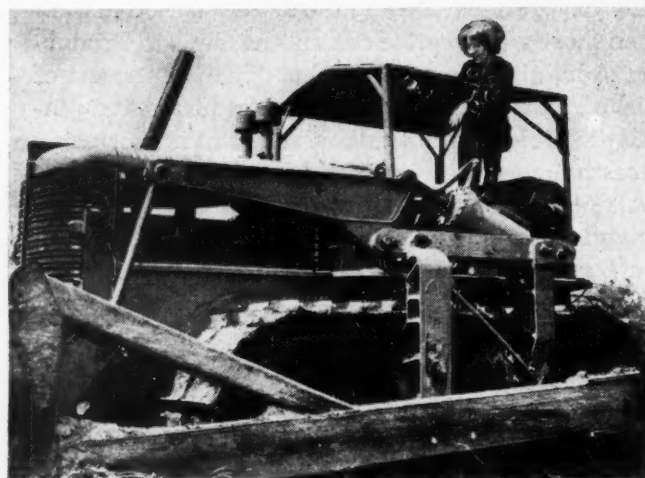


TOO BUSY WATCHING PAVING WORK at Fairfield-Suisun (Calif.) Army airbase (described elsewhere in this issue) to look at camera are **PAUL R. STEVENS**, Morrison-Knudsen paving superintendent, and **CHARLES PIERCE**, general manager of Viber Co.

Page 108

AT CASCADE DAM, U. S. Bureau of Reclamation earth-fill structure in southwestern Idaho, Foreman **BOB LEARY** (below), of Morrison-Knudsen Co., loads blast hole in diversion tunnel which is being driven to carry flow of North Fork of Payette River around damsite during construction.

COL. C. H. CHORPENING can't help smiling, because he finally landed in Oklahoma as U.S. District Engineer at Tulsa after some pretty rough service overseas in both E.T.O. and Pacific areas. The camera found him at observation point on new Ft. Gibson Dam along with genial **FRANK M. NEWELL**, resident engineer on this project.



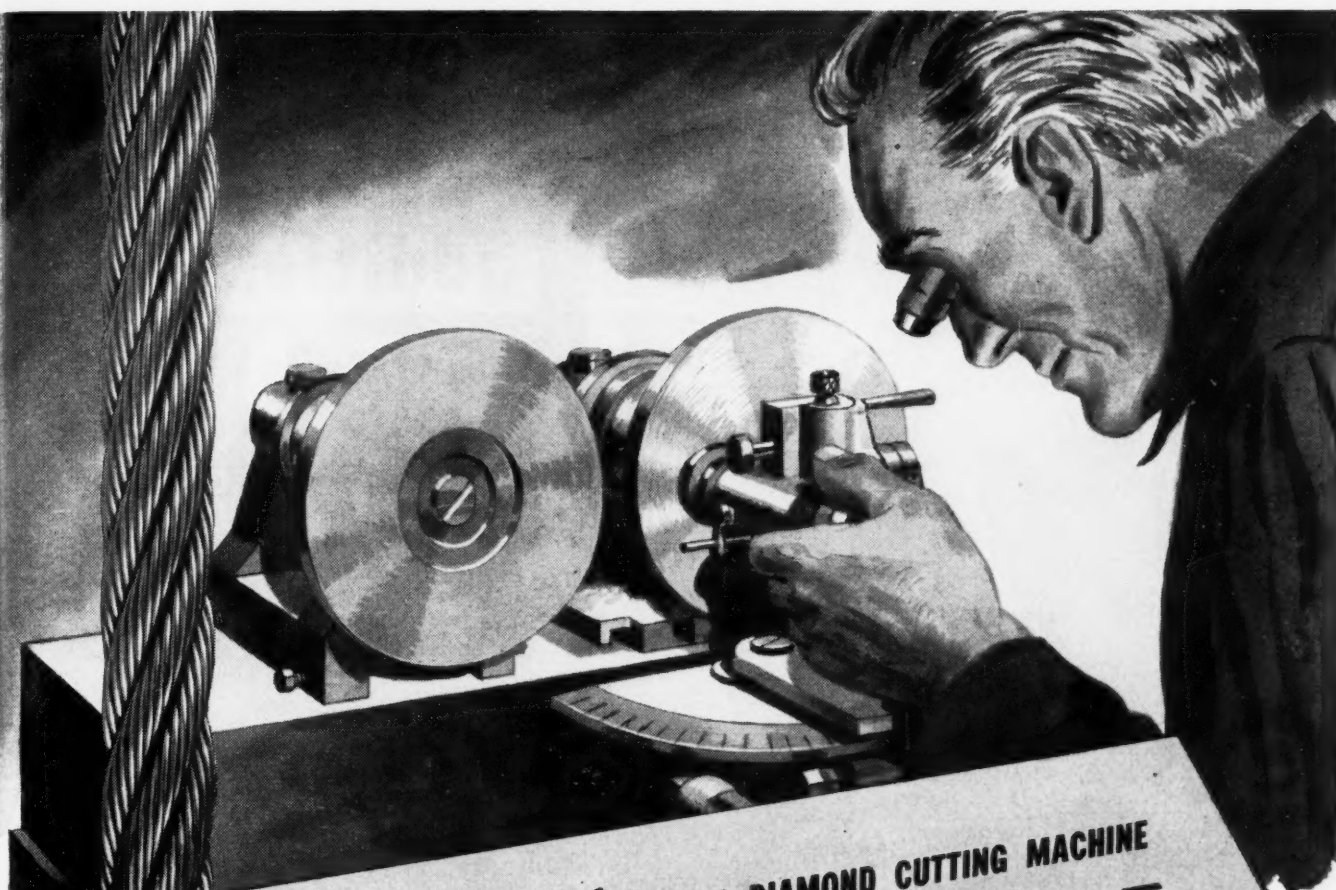
FROM BEAUTY SHOPS TO BULLDOZERS is career of **MRS. LOU HOKE**, petite 90-lb. head of Hoke Construction Co., San Antonio, Tex. In 1939 she gave up beauty parlor business in favor of contracting, specializing in earthmoving on soil conservation projects. While supervision of job takes up most of her time, she can, and frequently does, operate bulldozer, such as this husky Allis-Chalmers HD-14, when necessary.



GENERAL SUPERINTENDENT in New England territory for Turner Construction Co. is **NICHOLAS B. O'CONNELL** (below), who has been in company's construction department since 1920. He will make his headquarters in Boston office.

FIRST WOMAN (below) elected to membership in Iowa Engineering Society is **RUTH E. BEST** (Mrs. Charles Shafer), 25-year-old civil engineering graduate of Iowa State College, now employed by Des Moines engineering firm.





Precisionbilt LIKE A DIAMOND CUTTING MACHINE
J&L WIRE ROPE
PERMASET PRE-FORMED

Precisionbilt, like a diamond cutting machine, J&L Permaset Pre-formed Wire Rope will give you increased rope life. Just as diamond cutting is done by highly skilled men of long experience, J&L Wire Rope is made by men who have for years produced the best in wire rope.

The long service of J&L Wire Rope on any job reflects the quality of the steel from which it is made—J&L Controlled Quality Steel.

**J&L
STEEL**

JONES & LAUGHLIN STEEL CORPORATION

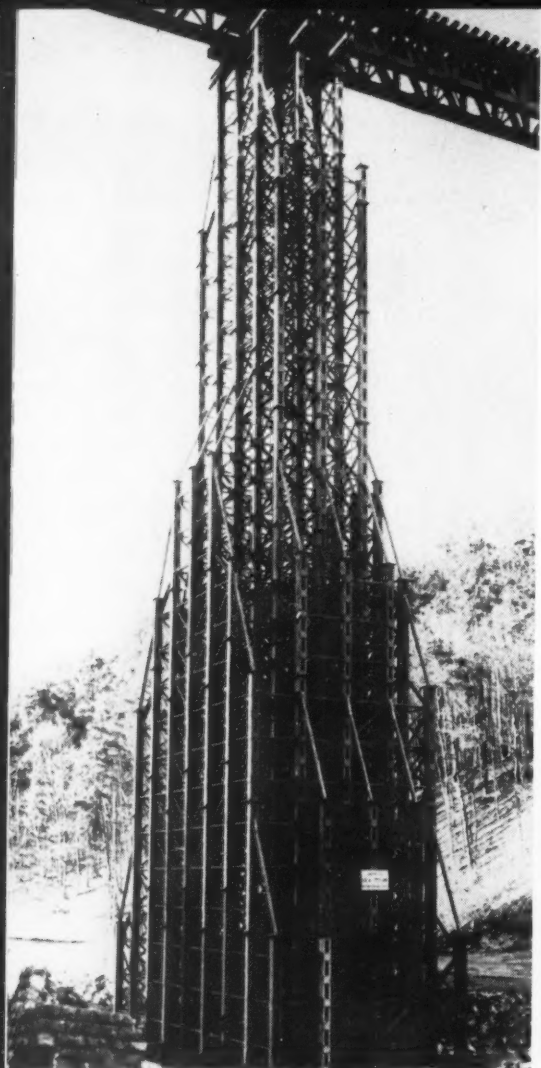
GILMORE WIRE ROPE DIVISION

PITTSBURGH 30, PENNSYLVANIA

J&L *Precisionbilt* PERMASET PRE-FORMED WIRE ROPE

JOB

oddities



"THE CATHEDRAL" is descriptive name used by residents of Martinet, west of Belfort, France, in referring to this 130-ft. pier built of Bailey bridging material to replace war-damaged railway crossing.

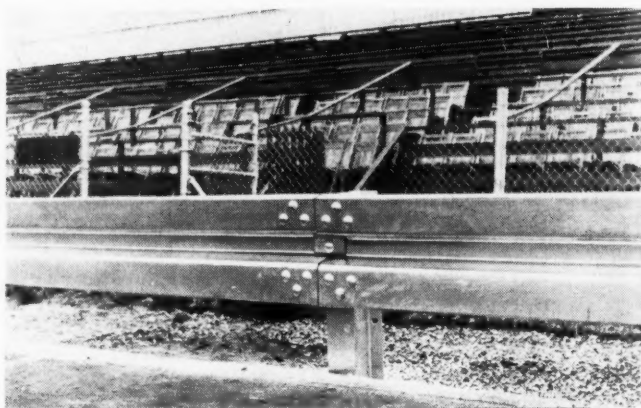
KEEL AND BOTTOM of wrecked canal boat is raised from waters of New York Harbor by Merritt-Chapman & Scott's 100-ton derrick boat "Century" for New York Engineer District. Last year, 1,000,000 cu. ft. of drift and debris was removed from harbor.



WARSAW STUDENTS help form chain to pass materials for rebuilding hospital at Wiezbno, Poland.

Triangle Photo

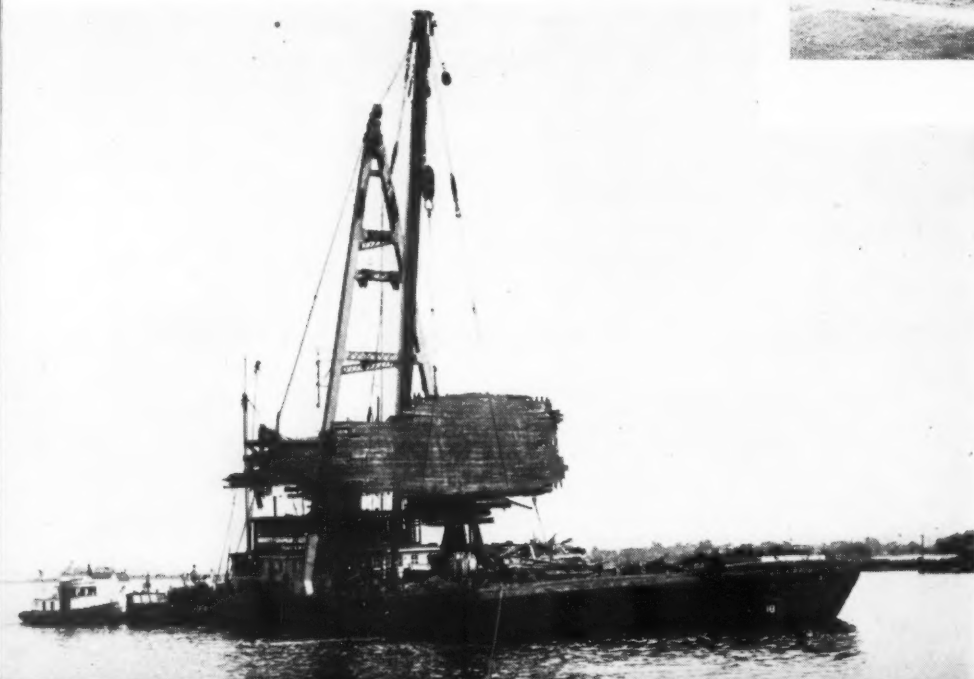
TO PROTECT SPECTATORS AND DRIVERS, new half-mile track for light-weight racing cars at Indianapolis is completely inclosed by Bethlehem safety beam guard rails (right), cold-formed 10-gage, 12-in. wide, supported on Bethlehem posts. Contractor was James H. Drew Co., of Indianapolis.



REPAIR SERVICE BY AIR (below) is furnished by Boardman Co., Oklahoma City Allis-Chalmers dealer. Dispatching tractor parts by plane helps reduce time wasted on stalled construction jobs.



Page 110



Trow
ceme
ing.
tant

At
char
stren
... and
maso

Sen
Ceme
Subsi

OFFICES:
Kansas

"TH

SKILLED HANDS PREFER...

ATLAS MORTAR CEMENT

The Satin of Masonry Cements



Trowels travel faster... easier... in satin-smooth Atlas Mortar cement. Its buttery consistency... without soaking or slaking... saves time and effort. And yield per bag... an important feature, especially on large jobs... is highly satisfactory.

Atlas Mortar Cement also rates high in other desirable characteristics—water retention, volume change, color, strength and durability. It is backed by years of research... and complies with Federal and ASTM specifications for masonry cement.

Send for descriptive circular. Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

OFFICES: Albany • Birmingham • Boston • Chicago • Cleveland • Dayton • Des Moines • Duluth • Kansas City • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco



**ATLAS
MORTAR
CEMENT**

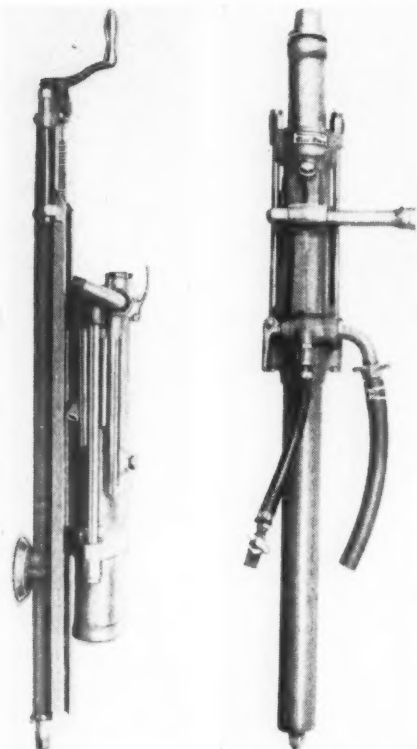
CM-MC-10

"THE THEATRE GUILD ON THE AIR"—Sponsored by U. S. STEEL—Sunday Evenings—ABC Network

CONSTRUCTION EQUIPMENT NEWS

OCTOBER 1946 REVIEW of Construction Machinery and Materials

DRIFTERS—Manufactured in three sizes, 3-, 3½- and 4-in. cylinder diameters, each drifter may be mounted as hand crank machine, Model WHC; air-motor-driven unit with motor attached to guide shell, Model WPMS; or with air motor attached to back head of drifter, Model WPM. Width of all cylinder ways is same on all sizes and models and each size drifter uses same guide shell. Worthington Pneu-Motor is of six-vane rotary type with simple spur gears. With exception of gear

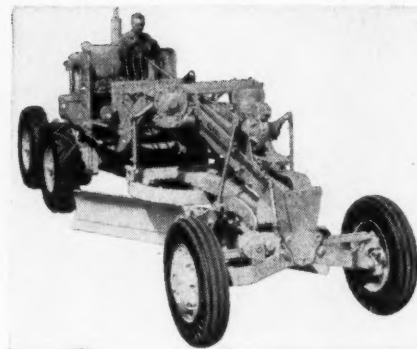


case and motor housing, motor parts used on WPM and WPMS machines are interchangeable. Also announced by company is new Blue Brute self-rotating stopper, Model WR-31 (right) for use in mining operations. It is well balanced and easily operated with holding handle placed above center of gravity. Four-pawl rifle bar rotation is used with air-thrown pawls set in pawl housing in cylin-

der. Rifle bar has a ratchet at lower end which engages pawls on back stroke of the piston.—**Worthington-Ransome Construction Equipment Division, Holyoke, Mass.**

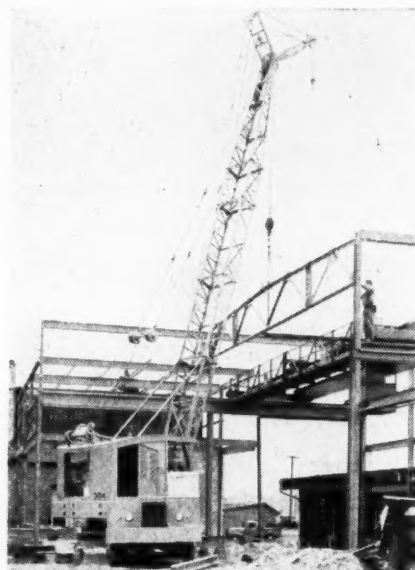
STEAM CLEANER — Streamlined design steam cleaning machine, known as Model JO Hypressure Jenny instantaneous steam cleaner, is compact, portable, steel-fabricated, electric-welded unit with all machinery end-mounted and fully accessible. It can be furnished with or without removable, die-formed steel machinery cover. Large, semi-steel wheels and steering tongue afford easy portability and maximum utility permitting easy transfer from one cleaning job to another. Oil or gas fired units are optional and only requirements for operation are electric current outlet and hose connection to water supply. This cleaner is described in a two-page specification circular, showing details of complete accessibility, unit control panel, and other features.—**Homestead Valve Mfg. Co., Coraopolis, Pa.**

MOTOR GRADERS — Distinctive high-arch front axle is featured in three new motor graders, No. 512 (extra-heavy duty), No. 414 (heavy duty), and No. 312 (medium duty). It is claimed that high-arch front axles give greater axle clearance than other graders, providing approximately twice capacity of conventional axles for straddling large windrows, and that bulldozing of axles through material is eliminated. All three sizes are powered by International diesel engines, available with cab-controlled push-button starting, and have range of eight forward and two reverse speeds. Three models are identical in overall design which gives each machine same wide range of blade positions,



adaptability to all types of surface, ditch and bank work and ability to do any work in proportion to its size and power. Materially improved steering is accomplished by use of tapered roller bearings and entirely new design incorporated in front axle. Special bulldozers and snow plows have been designed as optional equipment.—**J. D. Adams Mfg. Co., Indianapolis 6, Ind.**

TRUCK CRANE—Lifting capacity of 304 truck crane is 40,000 lb. with outriggers, 15,800 lb. without outriggers. Both are 85-percent ratings. Same base machine used on 304 crawler model is utilized on this unit. Extra strength regularly built into this machinery makes it possible to turn extra stability gained by truck mounting into extra



lifting capacity. Hinged boom folds easily, saves time whenever machine is moved. Pendant boom suspension simplifies changes in boom length and materially reduces cost of boom suspension cable. Booms are available in lengths up to 110 ft. Jib boom extensions are offered in 15- to 30-ft. sizes. Removable outriggers are optional, permit efficient operation as a shovel, pull shovel or dragline.—**Kochring Co., Milwaukee 10, Wis.**

For Dependable, Low-Cost Power

Specify Adams



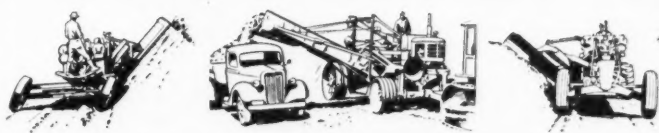
★ There's power galore under the hood of an Adams Motor Grader . . . fast-starting power, available at the push of a button . . . flexible, easily-controlled power that handles every grading operation effectively, economically . . . rugged, dependable power that "hangs on" in toughest going, even under heavy overloads.

But power alone in a motor grader is not enough. Great strength and stamina are needed too . . . the very kind you find in Adams' all-welded, machine-finished construction—in the big, husky frames, axles, gears and operating controls. Little wonder that

Adams Motor Graders are world-famous for always-dependable, long-life performance.

With all their tremendous power, strength and stamina, Adams Motor Graders are economical to operate and maintain . . . economical in fuel consumption—economical to service and repair. And Adams' world-wide dealer establishments guarantee constant availability of genuine factory parts, plus fast, efficient, reasonably-priced service. Let your local Adams dealer give you the complete story.

J. D. ADAMS MANUFACTURING CO., INDIANAPOLIS, IND.



ADAMS

ROAD BUILDING AND
EARTH-MOVING EQUIPMENT



REINFORCING SETTER ties Hi-bond column steel with simple tie. Helical ribs of bars form non-slip contact between rods.



BEAM AND SLAB reinforcement need not be tied at every intersection, according to contractor, since gear-like contacts between bars' reverse-helical ribs furnish resistance to slippage.

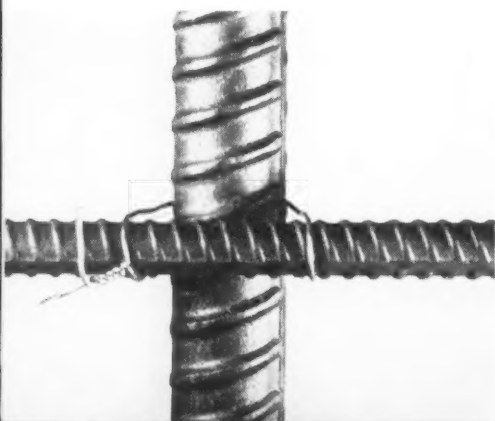
RIBBED REINFORCING BAR CUTS TYING COSTS

IN SETTING STEEL for the reinforced-concrete addition to Mt. Sinai hospital in Chicago, the contractor found his bar-tying costs greatly reduced because of the peculiar locking effect of the ribbed steel being used which required less tie wire and correspondingly less tying time. The bars, a recent development of Inland Steel Co. and its subsidiary, Joseph T. Ryerson & Son, Inc.,

known as Hi-bond, is rolled with reverse-helical cross ribs joined to two longitudinal straight ribs on opposite sides of the bar.

According to C. B. Leonard, president of the C. B. Leonard Co. of Chicago, subcontractor on the steel setting, the gear-shape contacts between ribs of crossed or lapped bars require only a single simple tie to hold the bars together instead of the conventional multi-

ple loop. The helical ribs furnish a non-slip contact, reports Mr. Leonard, that holds firmly when clamped tight with a single wire. He claims savings up to 25 percent in both wire and labor. On slab and beam sections it was found unnecessary to tie every joint, as the ribs locked together in the flat plane sufficiently to hold the bars in place. On vertical construction simple loops hold the bars securely



← →
SIMPLE TIES (left and right) securely hold heavily ribbed reinforcing bars and reportedly reduce tying costs.



with

We do
strengthen
vehicle
with eff

More
get to t
can be
wheel. A
most fat
with gre

Vicke
to existi
and ex
Fifteen
road ma
Power S

1494 O
Application E
LOS AN

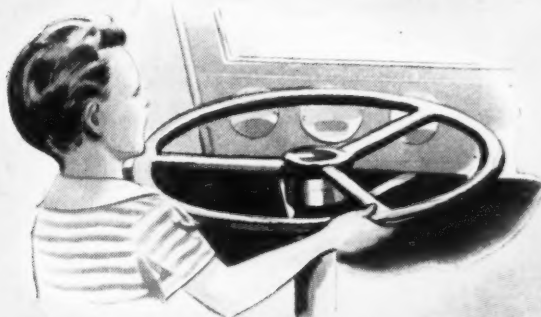
A SMALL BOY



CAN STEER A BIG TRUCK



LIKE THIS ➡



with **VICKERS** Hydraulic POWER STEERING

We don't expect a small boy to drive a big truck or bus, but his strength is many times equal to the steering effort required if the vehicle has Vickers Hydraulic Power Steering. The steering wheel turns with effortless ease, and the front wheels always follow exactly.

Moreover, no matter how rough the ground, no road shock can get to the driver. The steering wheel cannot spin, or jerk—the vehicle can be driven over the curb or through sand with no "fight" from the wheel. A flat tire will not cause swerving. The driver is relieved of the most fatiguing part of his job—enabling him to work faster and longer with greater safety.

Vickers Hydraulic Power Steering is simple, compact, easy to apply to existing chassis designs. It has automatic protection against abuse and excessive steering reaction forces. Lubrication is automatic. Fifteen years of successful operating experience on trucks, buses, road machinery, etc. have proved the value of Vickers Hydraulic Power Steering. Write for Bulletin 44-30.

VICKERS Incorporated

1494 OAKMAN BLVD. • DETROIT 32, MICHIGAN

Application Engineering Offices: CHICAGO • CINCINNATI • CLEVELAND • DETROIT
LOS ANGELES • NEWARK • PHILADELPHIA • ROCHESTER • ROCKFORD
TULSA • WORCESTER

**VICKERS HYDRAULIC
POWER STEERING . . .**
*is simple . . . compact . . .
easily installed*



Super Service

ON ALL TYPES OF JOBS!

**1/2 and 3/4 Yard
EXCAVATORS**

**5 and 10 TON
CRANES**

UNIT CRANE & SHOVEL CORP.

UNIT

MILWAUKEE WISCONSIN

Every UNIT is FULLY CONVERTIBLE

Regardless of whether your job calls for a shovel, clamshell, magnet, dragline, trencher, grapple or backfiller, a UNIT machine easily "fills the bill"! For UNIT is convertible to ANY attachment and gives an excellent account of itself on ALL types of service. The change from one attachment to the other can easily and quickly be made on the job, by any ordinary mechanic. UNIT exclusive features include: Automatic traction brakes... Disc type clutches... One-piece cast gear case and above all, UNIT's safety-promoting FULL VISION CAB.

**CONTACT
FACTORY
DIRECT
FOR PRICE
AND DELIVERY**

**UNIT CRANE & SHOVEL CORP. 6305 WEST BURNHAM STREET
MILWAUKEE 14, WIS., U.S.A.**

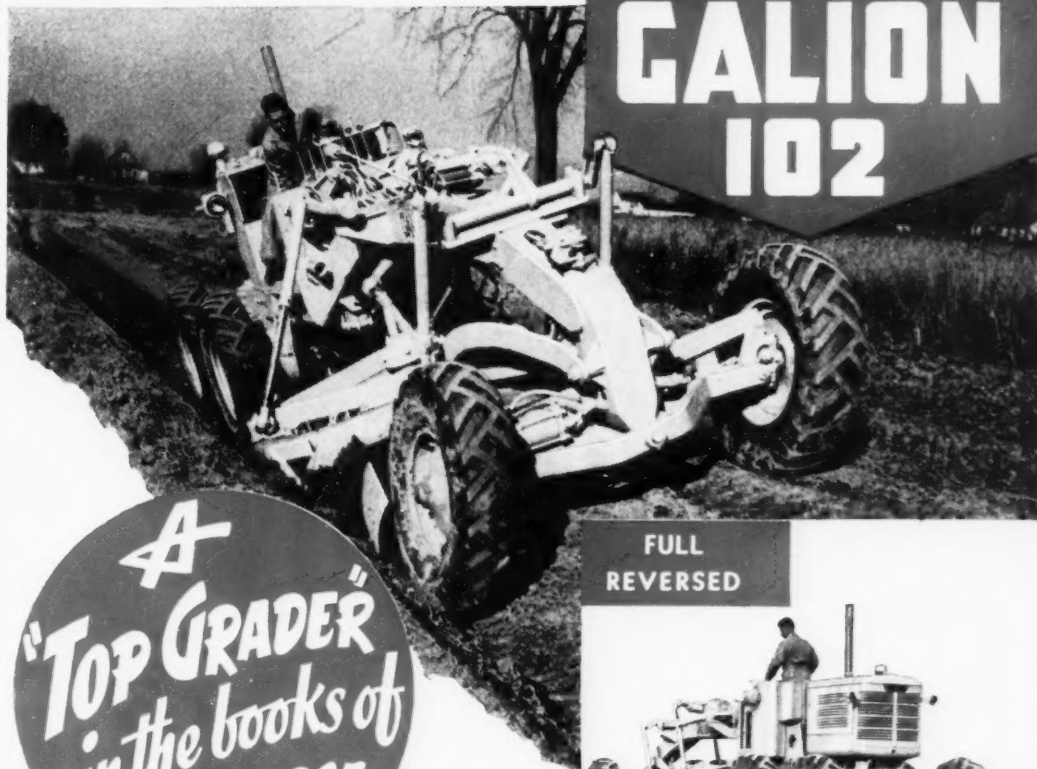
LASTING FUSE CAP—RDK, war's most powerful chemical explosive, basic charge of radically new "Big Inch" blasting fuse cap. Length of new cap is hardly more than 1 1/4 inches in length and less than 1/4 in. dia. It is easy to bury completely in the smallest stick of dynamite and reduces risk of its being struck with a mallet. Caps can withstand shock of heavy impact without detonating.—Olin Industries, Inc., Easton, Ill.

MOISTURE METER FOR SAND—Meter for determination of free moisture in concrete sand embodies new principles and procedures. Device is electrically operated and has specially designed "prod" or pick-up that is merely inserted in sand to obtain reading. It is constant-operating device—prod can be mounted



batching hopper, with meter dial indicating percent of free moisture continuously. Installation not difficult. User standardizes meter for particular sand he is using. Once set, requires no further calibration for that one specific quality or type of sand.—J. Thos. Rhame, Manufacturer, and Valley Ready-Mix Concrete Co., Harlingen, Tex., Distributor.

SAND AND GRAVEL PREPARATION PLANT—New, standardized, portable sand and gravel preparation plant features superior screening and dewatering, using standard units designed for economical dismantling, reassembling and moving to new locations. Its equipment includes belt conveyors, scrubbers, crusher, double-deck vibrating screens, sand dewatering screw conveyor, and necessary power drive. To facilitate moving, belt conveyors are mounted on steel frames that break up in 20-ft. sections, with adjustable legs for bolting and unbolting. All units are sectional, for easy dismantling, and moving, without sacrificing efficiency or capacity.—Link-Belt Co., 307 North Michigan Ave., Chicago 1, Ill.



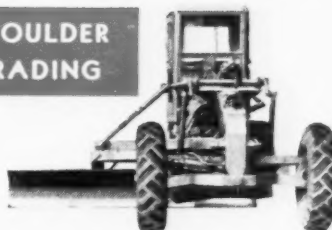
*A
"TOP GRADER"
in the books of
any user*

The GALION 102

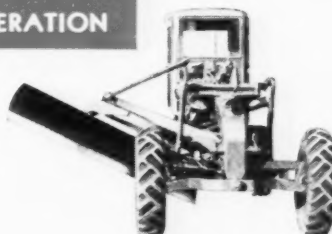
FULL
REVERSED



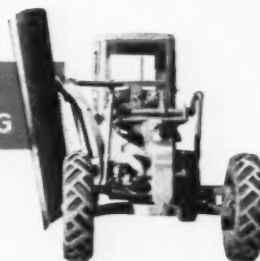
SHOULDER
GRADING



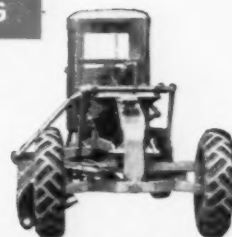
SLOPING
OPERATION



BANK
CUTTING



DITCHING



Contractors and Public Officials, who keep a close record on equipment operation costs and performance, will find the new GALION 102 Motor Grader "top grade" on both counts. The tremendous power and pressure at the call and under the complete control of the operator's fingertips, saves countless hours of time in shaping roads, airports, and other grading jobs right up to specifications.

FULLY REVERSIBLE BLADE

The Galion 102 is tops in the ease, precision, and completeness of its maneuverability. The hydraulically operated circle reverse, side shift, and blade lift, plus the high-arched box-type frame permit quick and exact adjustment of blade to each specific job—whether for ordinary blading or high bank cutting.

If you are not completely familiar with what the GALION 102 can do for you—write for Catalog No. 290.

The GALION IRON WORKS & MANUFACTURING COMPANY

General and Export Offices
Galion, Ohio, U. S. A.

GALION

IRON WORKS

GRADERS • ROLLERS

THIS BULLETIN
tells **HOW...WHEN...**
WHERE to specify



SIMPLE DIAGRAMS—TELEGRAPHIC EXPLANATIONS

... make this Blaw-Knox Bulletin not only useful and profitable, but quick and easy to read as well.

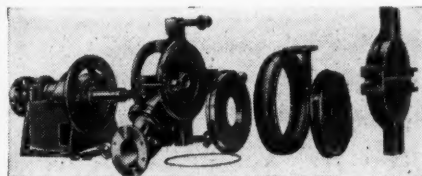
One suggestion taken from it may save you thousands of dollars.

Send for Bulletin No. 2035 on your letterhead.

BLAW-KNOX DIVISION of Blaw-Knox Company
208 FARMERS BANK BUILDING, PITTSBURGH, PA.

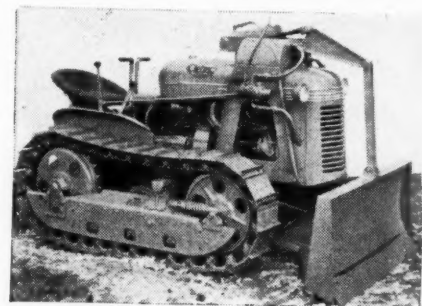
BLAW-KNOX STEEL FORMS

SLURRY PUMP — Only four bolts need to be removed to dismantle Type R slurry pump, designed for handling sludges and silt and moving all types of caustic or acid mixtures containing abrasives or solids. Impeller shaft sleeve can be renewed without touching suction or discharge piping. It is made in choice



of eleven different metals, ranging from gray iron to Morris Flint metal. Pump takes its suction from drive side, so packing is subjected only to suction or positive-head pressures. Thus pump operates equally well under high suction lift or positive head and may be connected directly to any tank or cut into line as booster pump without intermediate pressure tank or suction hopper.—**Morris Machine Works, Baldwinsville, N. Y.**

HYDRAULIC BULLDOZER—Named "Imp," this new small hydraulic bulldozer is entirely front-mounted, simple to install and easily transported from job to job. Lifting, lowering, floating and hold positions are all hydraulically controlled from

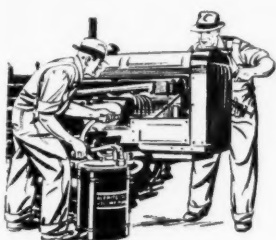


single lever. It has reversible cutting edge, rigid moldboard and push arms and is so constructed that underframe mounting allows for minimum width of cut. All thrusts are transmitted to drawbar connections. Combined with Cletrac Model HG-42, its light weight and positive traction enable unit to operate effectively on soft terrain.—**The Oliver Corp., Cleveland, Ohio.**

RESAW ATTACHMENT—Resaw attachment for use on Zephyr model 36 has just been announced, which bolts directly onto column of bandsaw and when not in use swivels out of way so saw can be used for scroll work and other bandsaw applications.—**The DoAll Co., 1301 Washington Ave. S., Minneapolis 4, Minn.**

Never Before so Much Lubrication Help in One Small Package

New Combination Volume Pump and Grease Gun Loader by Alemite



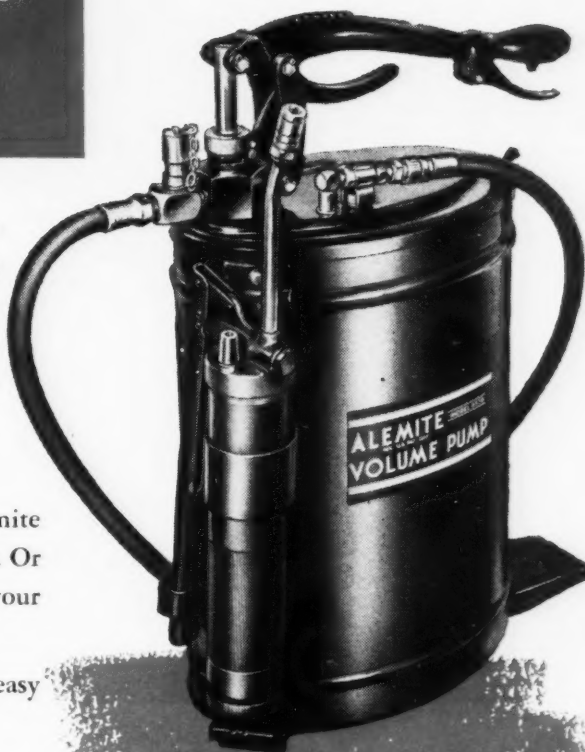
- It's a portable double-action volume pump that delivers grease to bearings through 5½ ft. of hose and hydraulic coupler at 3000 lbs. pressure. Every drop of lubricant protected from contamination.

- And—it's a clean, easy, safe loader for grease guns.

- It's available in a single unit as illustrated with genuine Alemite push-type or lever-type hand gun and hand gun carrying bracket. Or—you can order it without the gun and bracket and convert your present Alemite guns to fit loader equipment.

- The full, open head cover on the 35-lb. capacity tank makes it easy to carry and easy to fill. What's more...

- Two men can grease at the same time—one using the hand gun—the other with the volume pump.

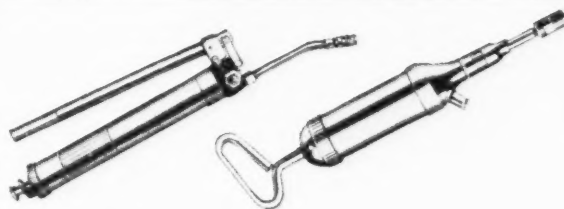
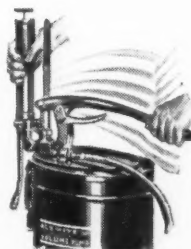


How You Load Grease Guns Full ... Without Mess or Waste



1. The hand gun has a special loader fitting. To fill the gun, simply insert the fitting into the loader valve on the pump. Then pump until the gun is full. No air pockets—a full gun every time.

2. You'll know when the gun is full. The loader valve automatically closes. The pump handle locks and you can't possibly overload the gun or damage the gun barrel. And there's no grease to wipe off the gun.



New Alemite Hand Guns with Loader Fitting

Lever-Type Gun... a heavy duty gun with loader fitting mounted in the head. Gun is available in two models—No. 6679-E and No. 6243-E.

Push-Type Gun—the loader fitting mounted in the head. Available in two models—No. 7553 and No. 7584.



Cutaway View of Alemite Loader Valve

Model G-306740. This is the same valve as shown on the guns. It's available for you to convert present Alemite guns to loader operation with the new Alemite Combination Volume Pump and Grease Gun Loader.

Consult the nearest Alemite Distributor
for complete details, or write to Alemite,
1840 Diversey Parkway, Chicago 14, Ill.

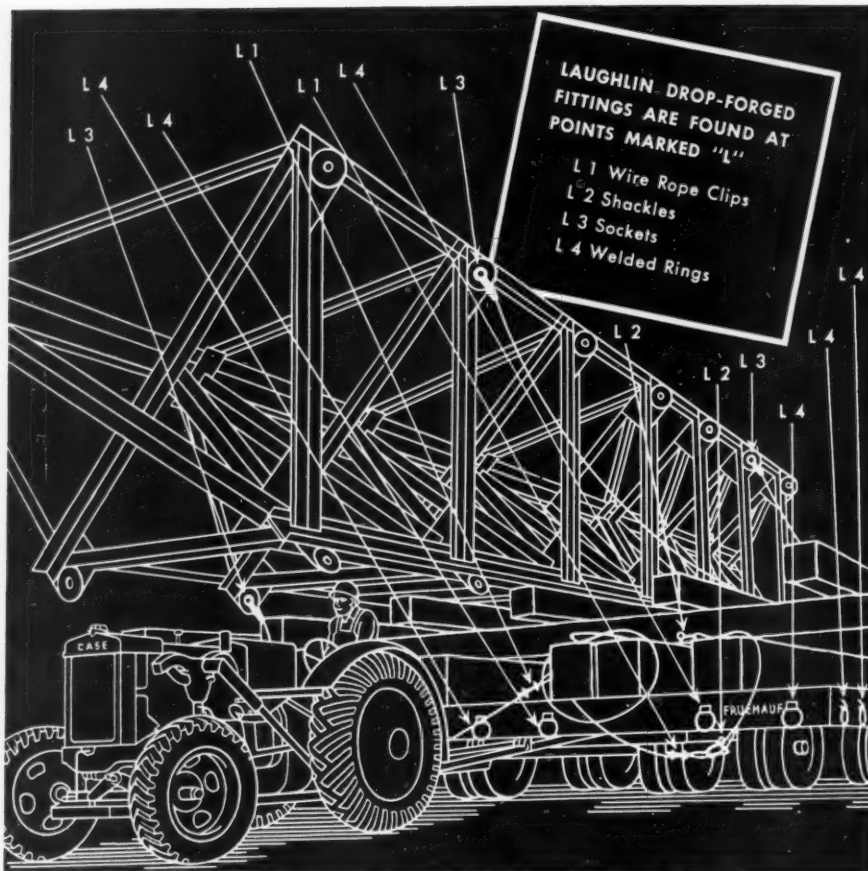
ALEMITE

Alemite ALONE Combines all 3 in Lubrication

1. EQUIPMENT 2. PROCEDURES 3. LUBRICANTS



FOR SAFER, LOWER-COST TRANSIT



For lashing structures in transit, for construction machinery or in hoisting, Laughlin wire rope and chain fittings combine maximum safety with smoother, more economical handling:

By avoiding accidents. Laughlin fittings, such as "Fist-Grip" Safety Clips, "Missing Links" and Safety Hooks, give you more safety features than any other line.

By reducing purchase price. You'll find that fittings for practically every purpose are *standard* with Laughlin. No delay or extra expense in ordering.

By giving more economical service. Laughlin fittings are *drop-forged* . . . last longer. And 3 Laughlin "Fist-Grip" Clips do the work of 4 ordinary U-bolts.

Wherever you use wire rope or chain, Laughlin quality fittings will bring you many advantages worth knowing about fully. For a complete catalog write to Dept. 1, **THE THOMAS LAUGHLIN COMPANY**, Portland 6, Maine. Laughlin fittings are distributed through mill, mine and oil field supply houses.

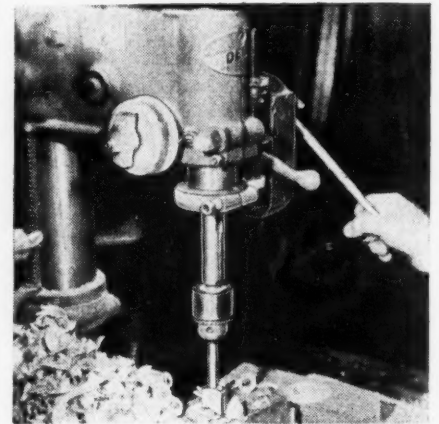
LAUGHLIN



THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



HEAVY DUTY EXPANSIVE BIT— Holes 1½ to 3½ in. in hard or soft wood can be bored with new expansive bit with ½-in. straight shank, for use in electric drill or drill press. Center lip, which cuts away core at center of hole, extends back to form clamp which firmly holds adjustable blade in diameter set. Clamp is locked tight by means of screw. Once locked in positive wedge-lock V-groove, cutter remains securely in place and cannot get out



of adjustment. Improved diamond-shaped screwpoint lessens chance of breakage. Lead screw is threaded finer than usual which helps pull bit through wood. Threads are ground to correspond to capacity of tool. Large open throat keeps cutters clean of chips. These bits are equipped with two cutting blades, one long and one short, to cover range of tool. Graduated scale on blade makes adjustment easy. Removable center lip also serves as clamp to hold blade. Blades are forged from highest grade carbon tool steel.—**Bruno Tools, 9330 Santa Monica Blvd., Beverly Hills, Calif.**

HIGH-PRESSURE PUMPS — Type ES pumps are designed for small quantity pressure fluid applications up to 200 psi. Standard vertical ball bearing motors are used. Changes in capacity cause only very slight changes in pressure, thus affording remarkably even head control.—**Economy Pumps, Inc., Hamilton, Ohio.**

BELT GRINDER ATTACHMENT— Light, narrow belt grinder attachment, type N-2, has been developed capable of performing all kinds of light burring and grinding operations. Combining versatility of platen grinding with economy and speed of contact grinding, it is ideal for light grinding of flats, arcs, angles, gear burring, weld grinding, cleaning up operations, etc.—**Porter Cable Machine Co., Syracuse, N. Y.**

Let Shell Service

SOLVE YOUR FUEL AND LUBRICANTS SUPPLY PROBLEMS



NO JOB IS TOO BIG for Shell to handle . . . there need be no division of the responsibility for supplying you with petroleum products.



WE HELP YOUR MEN. Shell Contractor Sales Representatives will instruct your maintenance men in the proper handling of lubricants and fuels . . . will show them

efficient, cost-saving methods based upon Shell's experience of many years' close association with construction operations.

WE KEEP YOU SUPPLIED with top-quality Shell products and maintain ample stocks on the job site to take care of abnormal consumption in emergencies.



MONTHLY STATEMENTS give you an over-all picture of petroleum products consumption . . . no need to assemble data from miscellaneous sources.



CALL ANY SHELL OFFICE and ask to have a Shell Contractor Sales Representative get in touch with you. Shell Oil Company, Incorporated, 50 West

50th Street, New York 20, New York; or 100 Bush St., San Francisco 6, California.



SHELL OIL COMPANY, Incorporated

*Which Gives --
More Efficient Lifting?*

ONE FINGER



Concentration of power thrust in a small area increases strains of unbalanced loads. It requires more effort--and produces excess wear on a hoist and body.

OR



Power thrust uniformly distributed throughout entire length and breadth of frame decreases strains of unbalanced loads--and minimizes wear on hoist and body.

A WIDESPREAD HAND

NOTE With PERFECTION'S scientific understructure construction, the power thrust from the hoist is delivered--not to a single bolster or small cross-member directly against the floor of the body--but first to the longitudinal sills which distribute the thrust to **ALL** bolsters. It is largely because of this superior design that PERFECTION'S record of performance and service is an enviable one.

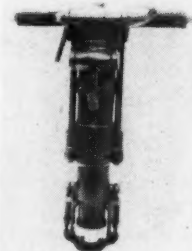


PERFECTION'S "Balanced-Power-Thrust" construction is standard on all stake and dump body styles with double compound lift arm hoists.

Built for all makes and models of trucks. Write for Bulletin and names of nearest Distributors.

THE PERFECTION STEEL BODY COMPANY GALION, OHIO

PERFECTION
TRUCK BODIES AND HOISTS



ROCK DRILL—Made of drop forgings throughout, rock drill is 22 in. long and weighs 45 lb. Exhaust ports are arranged to divert exhaust away from operator

and are of ample size to prevent freezing in most severe weather. Operated by new-type valve (patented), it can be furnished in dry blower and wet type and for 7/8- or 1-in. steel.—Schramm, Inc., West Chester, Pa.

HEAVY-DUTY TRUCKS — Thirty new Dodge truck models are available in 60 gross vehicle weight classifications ranging up to 23,000 lb. and in tractor-trailer ratings up to 37,000 lb. New line includes 2½-ton truck of 18,000-lb. gross vehicle weight in five wheelbases ranging from 136 to 235 in.; 3-ton truck of 20,000-lb. gross vehicle weight in five wheelbases ranging from 136 to 196 in., and 3-ton heavy-duty truck of 23,000-lb. gross vehicle weight in five wheelbases ranging from 136 to 196 in.—Dodge Division, Chrysler Corp., Detroit 31, Mich.

RAPID!



Junior Model with Horizontal Frame Attachment.

Will break 15 inch reinforced concrete walls up to 10 feet high. Frame attachment can be removed and boom tipped up to vertical position for breaking all types of pavement.

Ask about our

HEAVY-DUTY TYPE

R. P. B. CORP. MFR'S. of RAPID PAVEMENT BREAKER MACHINES

1517 Santa Fe Ave. Los Angeles 21, Calif.

SERVING THE EXCAVATING INDUSTRY SINCE 1872



You're Right . . . It's An OSGOOD!

A good big bite every time . . . getting loads out and on their way . . . that's operating at a profit—operating with an **OSGOOD**! You don't "coddle" on **OSGOOD** Power Shovel; it's designed and built to wade right in to rock and do the job.

OSGOOD Air Control of all motions—dig, hoist, swing and dump—means safer, faster, more precise operation . . . easier on the operator; gets more work done in far less time. Wide, self-cleaning treads as-

sure a solid footing and ability to walk right up to the job.

Pick out the toughest rock job you have . . . then choose an **OSGOOD** Power Shovel to do it—quicker, better and at less cost. Get the facts about **OSGOOD** Power Shovels today! There's a model and size to fit "your rock." Your nearest **OSGOOD** distributor will gladly furnish complete information . . . or write direct to The **OSGOOD** Company, Marion, Ohio.

THE
GENERAL
EXCAVATOR COMPANY
CRANES, DRAGLINES
AND SHOVELS
DIESEL, GAS, ELECTRIC

Associated with The General Excavator Company

OSGOOD

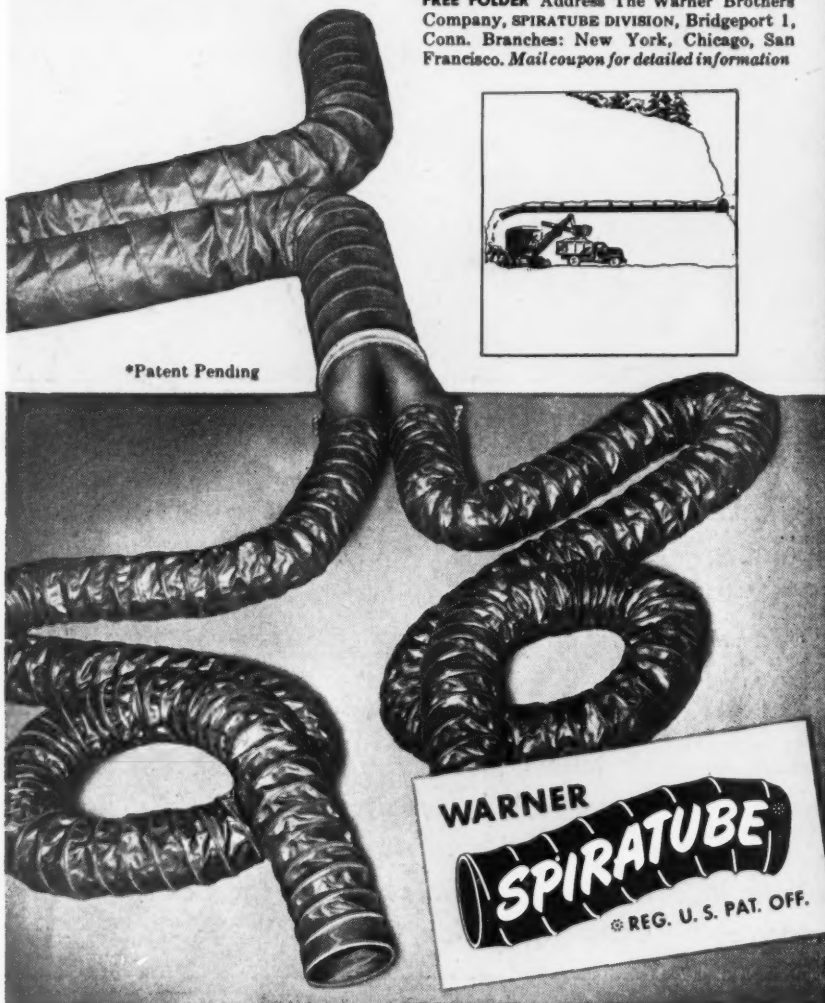
THE OSGOOD COMPANY • MARION, OHIO

OSGOOD
SHOVELS, DRAGLINES
CRANES

CRAWLER & WHEEL MOUNTS
DIESEL, OIL, GAS, ELECTRIC

No Crowding at the Corners

New non-collapsible tubing can be tied in knots without blocking passage of air or solids.



*Patent Pending

Air or air-borne light solids passed through SPIRATUBE* find a smooth channel that takes the turns without seriously reducing free area.

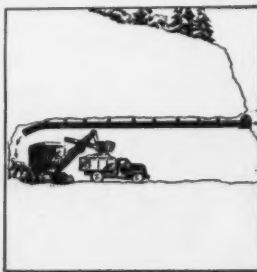
It's spiral-stitching (a SPIRATUBE exclusive) that makes the difference. No exposed wires to collect solids. No accordion-like crimping at the turns, as with ring-reinforced ducts.

**LIGHT—RETRACTABLE
QUICK-CONNECTING—SAFE—RUGGED**

For efficient conveying, specify SPIRATUBE—non-collapsible under pressure or vacuum. For convenience, specify SPIRATUBE—light-weight, quick-connecting, self-extending, retractable to $\frac{1}{2}$ extended length for easy stowing. For safety, specify SPIRATUBE—fire-resistant processed, no exposed metal. For long life, specify SPIRATUBE—strong-fibre duck, thermoplastic-coated.

SPIRATUBE was proved in active duty with U. S. Navy. 3"-16" diam.; lengths up to 25'.

FREE FOLDER Address The Warner Brothers Company, SPIRATUBE DIVISION, Bridgeport 1, Conn. Branches: New York, Chicago, San Francisco. Mail coupon for detailed information



**WARNER
SPIRATUBE**
REG. U. S. PAT. OFF.

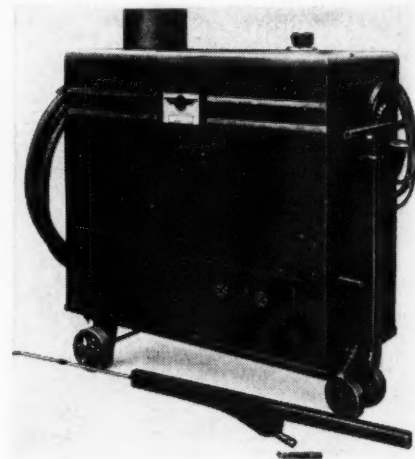
The Warner Brothers Company, SPIRATUBE DIVISION
329 Lafayette Street, Bridgeport 1, Conn.

Gentlemen: Please send free folder on SPIRATUBE.

Name
Company
Address

SPRINGS TO WORK ... STAYS EXTENDED ... TAKES SHARP TURNS ... CINCH TO STOW ... FOR AIR, GASES, POWDERED, GRANULAR OR OTHER LIGHT SOLIDS

VAPOR STEAM CLEANER—New machine for cleaning road, construction, railroad, marine and other machinery is available as stationary unit with base, movable unit with casters or trailer-carried unit. Two easily accessible valves enable one man to operate machine and pressure, once set, is automatically controlled throughout cleaning opera-



tion. There are only four valves on entire machine. System of instantaneous electric ignition enables working pressure of 100 lb. to be rapidly reached, eliminating wait for unit to warm up or need for pre-heating. Cleaner burns No. 1 fuel oil, kerosene or light oil and can be used with any high-grade cleaning material of standard make. Standard models are equipped with $\frac{1}{2}$ -hp., 110 v., 60-cycle a.c. motor and 5-ft. drop cord. Cabinet is 18x43x36 in. Overall size is 18x48x48 in. Unit weighs 550 lb. Machine has capacity of 100 gal. per hour.—White Engineering & Mfg. Co., 66 W. Passaic St., Rochelle Park, N. J.

SEISMOGRAPH FOR ROAD SOUNDINGS—Portable seismograph that locates rock levels rapidly along highway location has been developed by Rev. Daniel A. Linehan, chief seismologist of the Jesuit College in western Massachusetts, and proved practical and economical by use on Massachusetts highways. Weighing only 50 lb. and priced within reach of construction firms and engineers, device is being manufactured by Diamond Instrument Co., Wakefield, Mass.

"DEPARTMENTAL" COMPRESSORS—New compressor units are available in 60, 105, 160, 210 and 315-cfm. sizes, designed for installation in individual plant departments and as replacements for large central compressor systems.—Davey Compressor Co., Kent, Ohio.

w
c-
a-
ry
th
vo
ne
s-
n-
a-

ves
in-
les
be
rait
re-
uel
be
ing
an-
1/2-
and
x36
Unit
city
ngi-
saic

AD
aph
long
vel-
han,
Col-
and
l by
rays.
iced
irms
man-
ment

RES-
are
315-
ation
and
ntal
Com-

HOISTS • BODIES • WINCHES • CRANES • ROAD MACHINERY

There IS a Reason

Gar Wood—World's Largest Manufacturer of Truck and Trailer equipment—earned this leadership through ability to engineer and build units of such outstanding performance that men who know equipment best specify Gar Wood.

BUY VICTORY BONDS

GAR WOOD INDUSTRIES, Inc.

DETROIT 11 MICHIGAN

Other Products: • TANKS • HEATING EQUIPMENT • MOTOR BOATS



with **BUTLER**
Truck Loaders
*ONE TON PER MINUTE



Butler Truck Loaders can travel quickly to the job site without waiting for special loading equipment and, in addition, reduce labor costs to a new minimum since the truck driver is the only manpower required.

Truck Loader scoops are equipped with removable cutting edges and have a cutting action similar to a scraper. The scoop can also be tilted through 10° from its neutral position to give a 'reaching' or 'gathering' action to the upper jaw when loading leaves or other elusive materials.

Versatile Truck Loaders can be installed on your present dump trucks and can be quickly demounted should the truck be needed for another purpose. Write for free booklet—today. **Distributors WANTED.**

Butler ENGINEERING AND MANUFACTURING CO.
4906 ALCOA Avenue • Los Angeles 11, California

PORTABLE APRON FEEDER—

This long feeder, mounted on its own chassis and wheels, with hopper attached, can be swung into place quickly for short-time set-ups. Now made in 36-in. width and meas-



uring 30 ft. from center to center of head and tail shafts, it is supported on single axle equipped with dual pneumatic tires. Steel wheels are optional.—**Pioneer Engineering Works, Inc., Minneapolis, Minn.**

SOLENOID TWO-WAY VALVE—

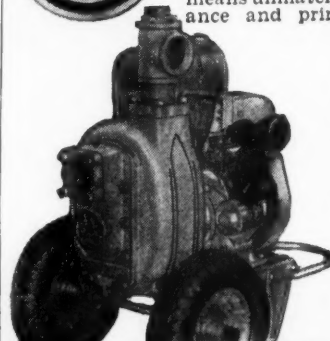
New solenoid-operated two-way valve combines solenoid with two-way valve in one small, compact unit, achieving convenient remote control of hydraulic valve in water and sewage disposal plants. There is saving of tubing and oil involved in conventional all-hydraulic remote control system and small size of device makes it ideal for installation in hard-to-reach or congested areas, when such installations are desirable.—**Electrol, Inc., 85 Grand St., Kingston, N. Y.**



They Can Take It
DUAL PRIMERS



When it comes to **DURABILITY**, CMC Dual Primers have the "guts" to stand up to those tough, steady 24-hour grinds. **DUAL PRIME** means unmatched performance and priming speed.



A husky 3" CMC Dual Prime. One of the complete line from 1½" to 10" sizes. Also 3" and 4" Diaphragms. Get catalog.

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

Mixers • Pumps • Hoists • Batching & Placing Equipment • Saws • Carts • Barrows



It's the *Curve* that does it

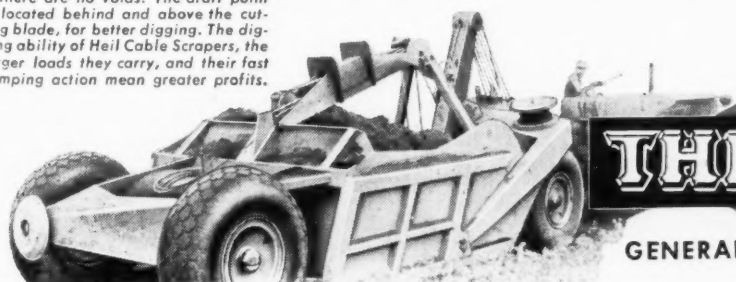
... earthmoving costs are lower when Heil Cabledozers are on the job

In addition to proper balance and strength, Heil Cabledozers have that something extra that puts them way ahead in dirt-moving ability. It is the Heil scientifically contoured blade. This specially curved blade, with its reversible cutting edge, was designed and de-

veloped by Heil engineers after studying and analyzing dirt-moving operations under the widest variety of conditions. Its advantages are better digging and rolling action — greater load-handling ability.

Ever-increasing demands from contractors all over the world prove that earthmoving costs are lower when Heil Cabledozers are on the job. Join the long list of satisfied Heil Cabledozers users today. See your International Industrial Power Distributor.

Heil Cable Scrapers have many unique, cost-cutting features. The bowl design is different. It permits the loading of 15% more material in the same length of time with the same drawbar horsepower — there are no voids. The draft point is located behind and above the cutting blade, for better digging. The digging ability of Heil Cable Scrapers, the larger loads they carry, and their fast dumping action mean greater profits.

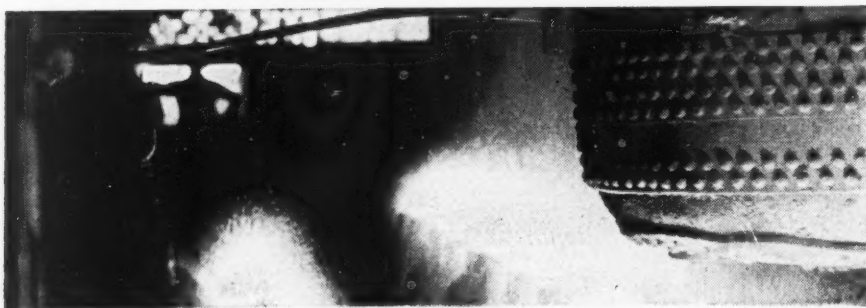


THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

R-84

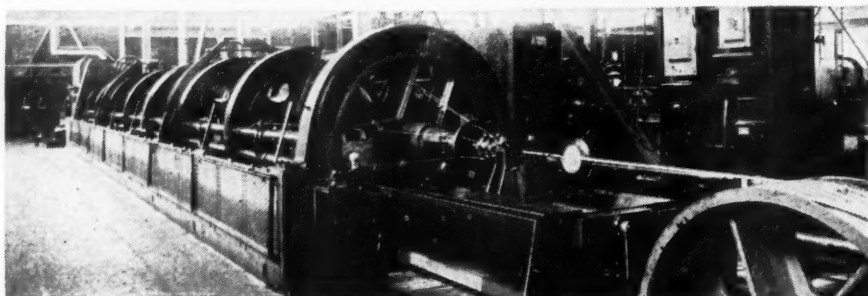
FROM THE MAKING OF THE STEEL—



THROUGH PROCESSING THE WIRE—



TO FABRICATING THE WIRE ROPE—



WICKWIRE SPENCER WIRE ROPE

is safeguarded by continued, careful control to assure the utmost in performance, safety and long life. Wickwire Spencer Wire Rope is available in all sizes and constructions—both regular lay and WISSCOLAY *Preformed*.

HOW TO PROLONG ROPE LIFE AND LESSEN ROPE COSTS...

Thousands of wire rope users—old hands and new—have found "Know Your Ropes" of inestimable value in lengthening life of wire rope. Contains 78 "right and wrong" illustrations, 41 wire rope life savers, 20 diagrams, tables, graphs and charts. For your FREE copy, write



Wire Rope General Sales Office, Palmer, Mass.



WICKWIRE SPENCER STEEL DIVISION

The Colorado Fuel and Iron Corporation



THE CALIFORNIA WIRE CLOTH CORPORATION

EASTERN GENERAL SALES OFFICE
381 Delaware Ave., Buffalo 2, N. Y.

EXECUTIVE OFFICES
DENVER 2, COLORADO

WEST COAST OFFICES
OAKLAND 4, CALIFORNIA

NEW CITY OFFICES
SEE PHONE BOOK

TRAILER-MOUNTED DERRICK—Ideco "Kwik Lift" telescoping mast mounted on Fruehauf carry-all trailer is shown on deep-well servicing, exploratory work and slim-hole drilling and is adaptable to construction operations. Masts up to 130 ft. can be provided.—**Fruehauf Trailer Co., Detroit, Mich., and International Stacey Corp., Columbus, Ohio.**



HEAVY-DUTY FLOORING—Hex-steel, heavy-duty steel grid, scientifically designed to be imbedded in concrete, mastic or any plastic floor material, is described and illustrated in 6-p. folder. It comes in standard units, 3x10 ft., 12- and 14-gage thicknesses, and 3/4-, 1- and 1 1/4-in. depths.—**Wm. F. Klemp Co., 6601 S. Melvina Ave., Chicago 38, Ill.**

HELMET GOGGLE—Model 500 is completely adjustable to take care of various facial and head requirements and for wear over personal glasses. It can be worn in on or off position. Facial fit of cups, together

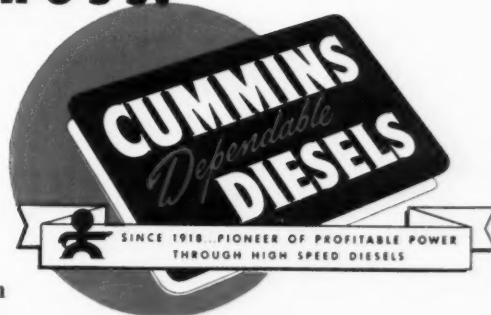


with indirect ventilation, make this unit equally efficient for grinding, chipping or dust operations. Sweat-band is wrinkle free with wool felt lining; it is held in place with glove fasteners.—**Boyer-Campbell Co., 6540 St. Antoine St., Detroit 2, Mich.**

*dependable

**is more than a word with us...it's
our way of doing business.**

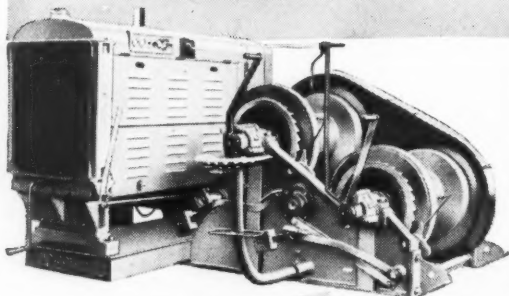
* Specify a Cummins Diesel and you can depend upon prompt and competent service from a nationwide dealer organization. You can depend upon the Factory to stand behind that engine throughout its entire work-life. You can depend upon all this because with Cummins, **dependable** is more than a word . . . it's our way of doing business.



CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

THE NEW LIDGERWOOD GDE SERIES HOIST

... Its faster
load lifting
removes
construction
bottlenecks!



Principal Features

- Ratings from 4,000 to 11,000 pounds single line pull.
- At rope speeds of 200 to 350 feet per minute.
- Diesel, gasoline or electric powered.
- Steel frame construction.
- High-pressure lubrication.
- Anti-friction bearings.
- Grouped levers at operator's seat.

Bring on your tough load lifting problems for this light weight hoist to solve faster, cheaper and better than ever before!

This New Lidgerwood Series of light weight hoists will give faster, dependable, trouble-free service on dozens of construction jobs—that's the way Lidgerwood builds them! The advanced engineering design of this hoist and its compact rugged power are a heritage of 72 years of experience in building only quality hoists.

For adequate power, responsive, flexible control, and economical operation get the complete facts on this productive, heavy service, light weight hoist—write us today.

LIDGERWOOD

ESTABLISHED 1873

Manufacturing Company

7 DEY STREET, NEW YORK 7, N. Y.

Get set for post-war building construction

--make every bid count!

Put this handy Dingman pocketbook to work, in making accurate estimates for building construction, in saving time and error in the job of determining profitable, competitive prices. Based on the most practical experience, it is full of helpful pointers for new or experienced estimators, shows how to determine quantities of labor and amounts of material to produce a unit of completed work in practically every branch of building construction.

Third Edition

ESTIMATING BUILDING COSTS

By CHARLES F. DINGMAN

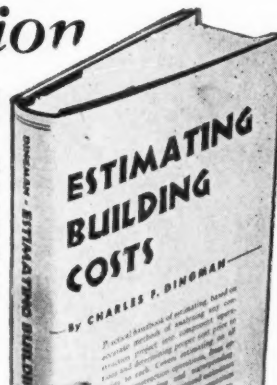
Architectural Engineer

401 pages, 4 x 6 1/4, 27 illustrations, \$3.50

every construction job into its component parts, to apply cost data, adjusted to living conditions, to the several operations necessary, and to calculate a price that will approach the actual cost of doing the work as closely as is humanly possible.

ESTIMATING BUILDING COSTS tells how to make an estimate on a wood, brick, or concrete building construction, and covers every operation from excavating to roofing and waterproofing—with valuable material on such important details as fireproof construction, shingling, steel sash, or cement gun work. Included also are a number of useful data tables, but its primary purpose is to give the step-by-step methods that will train the reader to become a thoroughly competent estimator. This book helps you to make sure that no element of the work is overlooked, and explains the special factors to watch in dealing with each type of work.

While essentially a book of methods, ESTIMATING BUILDING COSTS contains 227 data tables and other useful reference features for the estimator, such as a reminder list of job elements, and a number of practical mathematical formulas.



Practical features

- Covers earth handling and moving so fully that the data are applicable to building operations of practically any scope and size, also to other construction operations involving this work
- Contains extensively rewritten and expanded sections on handling and finishing concrete
- Includes chapters on estimating plumbing and heating, useful both to the general contractor and to the specialist in these fields.

SEND THIS MCGRAW-HILL COUPON

McGraw-Hill Book Co., 330 W. 42nd St., N. Y. 18
Send me Dingman's ESTIMATING BUILDING COSTS for 10 days' examination on approval. In 10 days I will send \$3.50, plus few cents postage, or return book postpaid. (Postage paid on cash orders.)

Name _____

Address _____

City and State _____

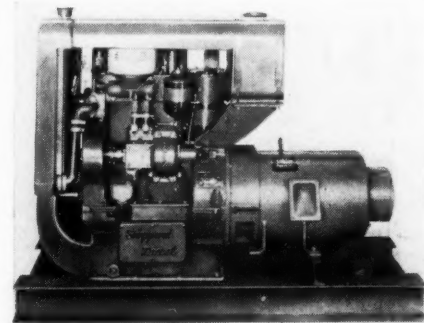
Company _____

Position _____ FCM 10-46

(For Canadian prices, write: Embassy Book Co., 12 Richmond St. E., Toronto 1)

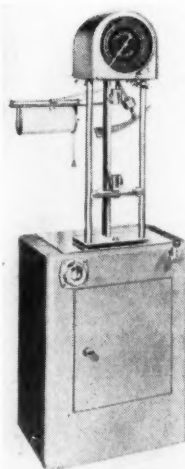
DIESEL A.C. GENERATING SET

—Recently developed "Regulect" system, utilizing novel built-in circuit, is simple, compact, foolproof, and without moving parts. Facilitates set, it requires no attention while operation. Extremely sensitive to small changes in generator voltage,



it maintains normal variation of 2 percent from no load to full load. Company has adopted this generator as standard equipment on diesel-driven a. c. generating sets of 5- to 15-kw. capacity. Other Sheppard generating sets are available up to 36 kw. that operate and function in a similar manner.—R. H. Sheppard Co., Hanover, Pa.

ELEVATING ENDGATE—Old-fashioned manual lifting for truck loading is replaced by smooth hydraulic power that lifts or lowers loads up to ton in 10 sec. Unit is available for installation on any make of truck trailer.—Fruehauf Trailer Co., Detroit, Mich.



LOW - RANGE TESTER

— Built for lighter materials or small finished items, tester has four separate capacities, each available instantly and shown individually on large dial. These ranges are 0-10 lb. in 1-oz. dial divisions; 0-25 lb. in 2 oz.; 0-50 lb. in 4 oz.; 0-100 lb. in 8 oz. Overall height is 63 in. and net

weight is 162 lb. Lower grip travel is continuously variable from 0 to 19 in. per minute. Unit has one half of one percent accuracy, pendulum action, max-load reading, feather-weight and swivelled upper grip, stroke limiting switches, forward-reverse switch, elongation gage, and stress-strain recorder.—W. C. Dillon & Co., Inc., 5410 W. Harrison St., Chicago 44, Ill.

You've got to be
GOOD
to wear it!



Like a college letter, the AGC rating plate isn't given to just anyone. Only the mixer or paver that has proved itself can wear it. In the words of the plate, the equipment must "guarantee to hold and properly mix a specified number of cubic feet of concrete plus 10% when operating on the level."

Equipment wearing the plate must live up to that guarantee. It is your assurance of quality and capacity . . . your assurance that you won't be guessing when you estimate jobs.

Before you buy, look for the AGC rating plate.



MIXER MANUFACTURERS' BUREAU

Affiliated with the Associated General Contractors of America, Inc.

Member Names

Chain Belt Company
Milwaukee, Wis.

Construction Machinery Co.
Waterloo, Iowa

Koehring Company
Milwaukee, Wis.

Ransome Machinery Co.
Dunellen, N. J.

Kwik-Mix Company
Port Washington, Wis.

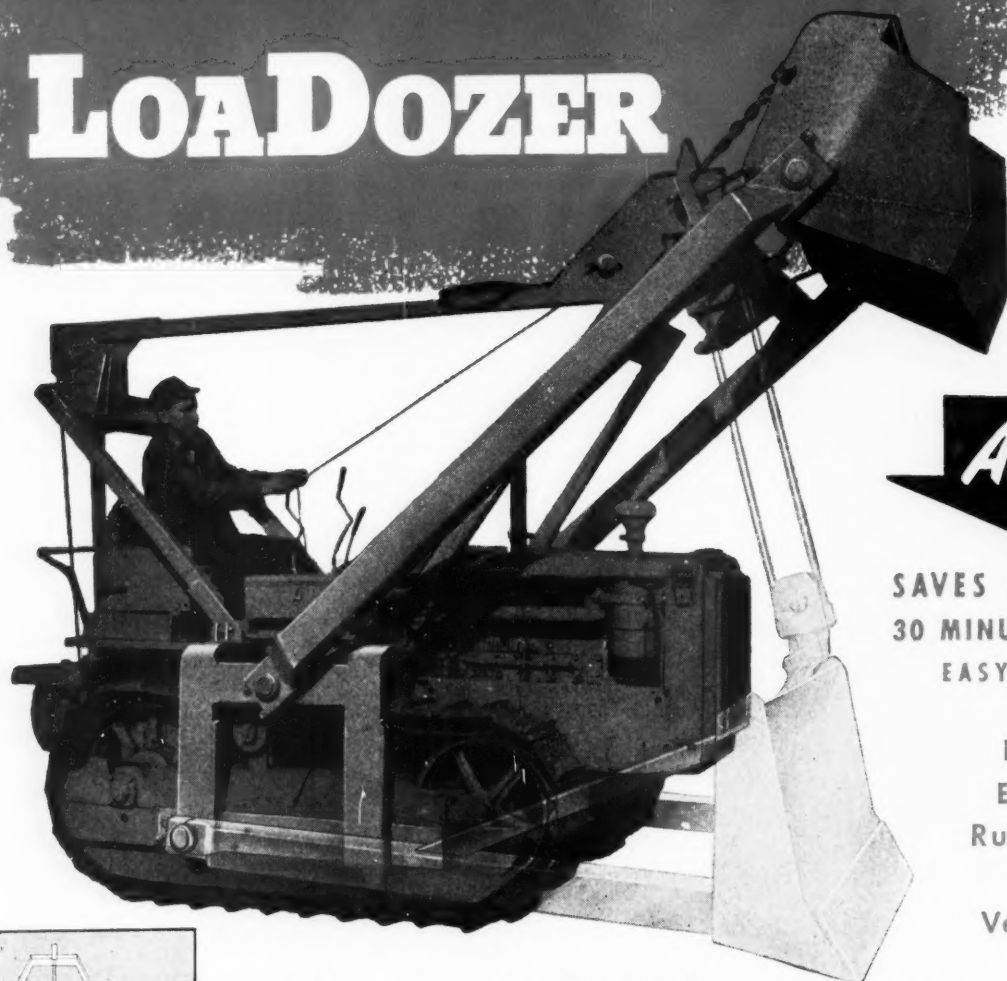
The Foote Co., Inc.
Nunda, N. Y.

The Jaeger Machine Co.
Columbus, Ohio

The T. L. Smith Company
Milwaukee, Wis.

The Knickerbocker Co.
Jackson, Mich.

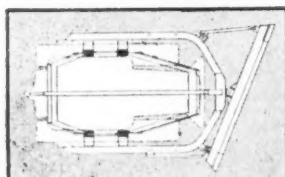
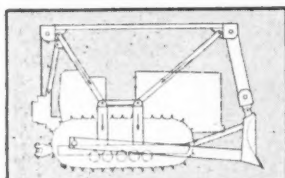
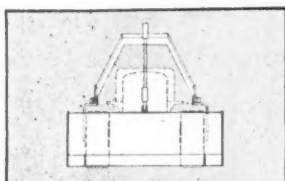
NOW-THE SOUTHWEST LOADOZER



All this

SAVES ONE TRACTOR
30 MINUTE CHANGE-OVER
EASY OPERATION

Balance
Economy
Ruggedness
Speed
Versatility



"Over Center Track Mounted"
design gives perfect balance

All these features are "built-in" qualities of the new SOUTHWEST "LOADOZER"—Extra

values that mean greater efficiency and economy in Loader and Bulldozer operations. Remember—you SAVE ONE TRACTOR—it takes only 30 MINUTES TO CHANGE OVER this combination Loader-Bulldozer unit.

- Built for all four makes of track type tractors.
- See your equipment dealer about the complete line of SOUTHWEST CONSTRUCTION EQUIPMENT.
- For complete specifications on this Loader-Bulldozer combination unit—WRITE FOR BULLETIN CM-11.

ANOTHER EXAMPLE
OF *Southwest's* LEADERSHIP

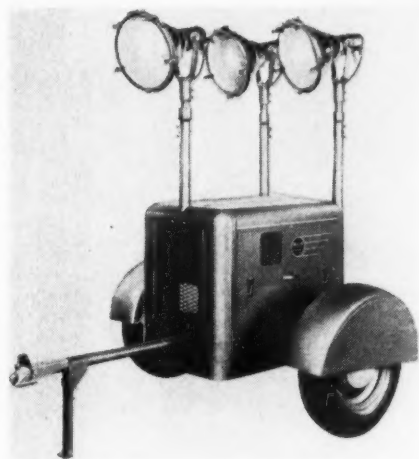
CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA



PORTABLE POWER UNIT—Gas-engine-driven generator can be used for illumination on night shift, as well as for operation of electric saws, drills, etc. It is equipped with air cooled engine that won't over-heat in summer or freeze in winter; it stops and starts by means of push buttons on control panel. Generator

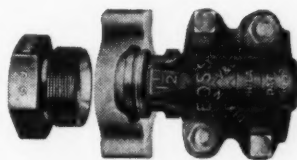


is 4-pole self-excited, inherently regulated, direct-connected a.c. type and is cooled by centrifugal blower. Three toggle switches are provided on control panel for floodlights, plus two twistlock receptacles and 12-v. panel light. Two 6 v. starting batteries are incorporated and charged automatically by means of separate d.c. generator while unit is in operation.—**Revere Electric Mfg. Co., 6009 Broadway, Chicago 40, Ill.**

PAPER COATING PROCESS—New process for coating direct print and blueprint paper allows paper to keep its properties over long periods of time, with less background discoloration on direct prints and improved, clearer whites on blueprints.—**Wing-Valentine Co., 7120 North Clark St., Chicago 26, Ill.**

AIR HOIST—Small, lightweight, air-powered hoist, "Air-Winch," capable of lifting 500 lb. yet weighing only 85 lb. has been announced. It has rope capacity of 150 ft. of 1/4-in. rope, is only 18 in. long, 9 1/2 in. high and 11 in. wide. It is powered by simple, four-cylinder, reversible, piston-type air motor and can be used in many different ways on average construction job. Light enough for one man to move quickly from place to place, AW-80 hoist can be mounted in any position on car, timber, column or bar. Regular equipment includes set of clamps for column or bar mounting but chains or common drift bolts may be used to secure winch if desired.—**Sullivan Division, Joy Mfg. Co., Michigan City, Ind.**

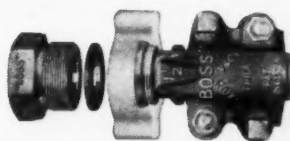
You Can Rely on **QUALITY** Service From Every **DIXON** Coupling and Clamp



"G J-BOSS"
Ground Joint, Style X-34
Female Hose Coupling

Strong, durable, trouble-free. For high or low pressure steam, air, hydraulic and water hose. Washerless construction. Powerful "Boss" Offset and Interlocking Clamps anchor coupling to hose with tight, full circumference grip... no straight line leaks or pinching. Large wing nut provides quick coupling and uncoupling. CADMIUM PLATED-RUSTPROOF. Sizes 1/2" to 4", inclusive.

The **DIXON** Line covers the complete range of industrial hose couplings, nipples, menders, and clamps for contractors' and general industrial service. Each has earned a reputation for efficient, long-life performance. All are available from conveniently located distributor stocks.



**"BOSS" Washer Type
Female Hose Coupling**

Same as "G J-BOSS" X-34 Coupling, except that leakproof seal between stem and spud is effected by washer instead of ground joint union. Sizes 1/4" to 4".



**"BOSS" MALE
COUPLING**

Companion to both ground joint and washer type female couplings. Strongest and safest of its kind for all applications. Extensively used in place of standard I.P.T. nipples, as each size fits same size straight end hose. Cadmium plated-rustproof. Sizes 1/4" to 4".



"G J-BOSS"
Air Hammer Coupling
Ground joint, WASHERLESS design, and built for the toughest, roughest air hose jobs in construction, roadbuilding, quarrying, etc. Anchored to hose with tight-gripping "Boss" Interlocking Clamp. Compact and heavy types. Cadmium plated-rustproof. Also available in washer style.



"DIXON"
Air Hammer Coupling
Strong, safe, economical... for rock drilling and other air hose service. Oil treated leather washer forms efficient seal between stem and spud. Anchored to hose by husky malleable iron "Dixon" Clamp. Compact and heavy types. Cadmium plated-rustproof. Also made in ground joint washerless design.

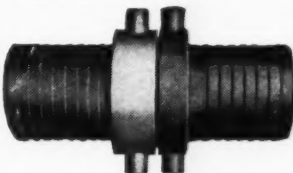


"AIR-KING"
Quick-Acting, Universal
Hose Coupling

For convenient, low-cost service on drills, hammers, spades and other pneumatic tools. Same size locking heads for all I.P.T. and hose shank sizes within its range. Has patented safety locking arrangement. Bronze or malleable iron, cadmium plated.



"KING"
Combination Nipple
With "Cor-O-Zig" Corrugations Has the following advantages over standard iron pipe nipples: Fits straight end hose of same I.P.T. size; easier to attach because of smoothly rounded spiralled end; holds tighter under clamp pressure because zig-zag corrugations provide two-way gripping surface. Sizes 1/2" to 6".



"KING" Shank Coupling
For Suction and Water Hose
A husky coupling that is quickly connected and disconnected and absolutely uniform in quality, threading and dimensions. Made in all malleable iron; malleable iron with brass nut; or all brass. Shanks have deep, clean corrugations. Sizes 1 1/4" to 8", inclusive.



"KING" Hose Clamps
Single Bolt, Double Bolt
Strong, convenient, economical. Made of malleable iron, cadmium plated. Easily attached and can be used over and over again. Tightening provides evenly distributed, all-round pressure on hose. Double bolt has exclusive quadruple take-up. Full range of sizes.

IF IT'S A **DIXON** PRODUCT
IT'S DEPENDABLE

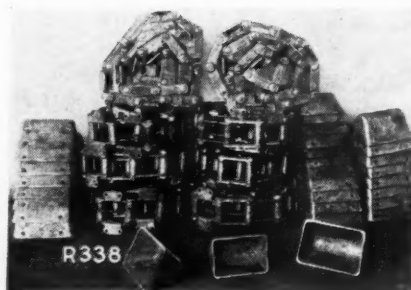
DIXON

VALVE & COUPLING CO.

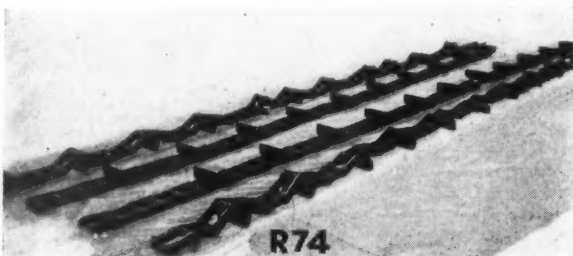
Main Office and Factory: **PHILADELPHIA, PA.**
BRANCHES: CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON

If the Wearing Parts on Your Equipment are Giving Long Service, They're Probably Manganese Steel...

Abusive service is the common lot of much of the equipment used in the construction field. Severe impacts, heavy loads and continuous abrasion are encountered to a degree which results in short service life when wearing parts are made of ordinary iron or steel. The high cost of operating interruptions caused by the failure or premature replacement of such parts is familiar to all users of construction equipment.

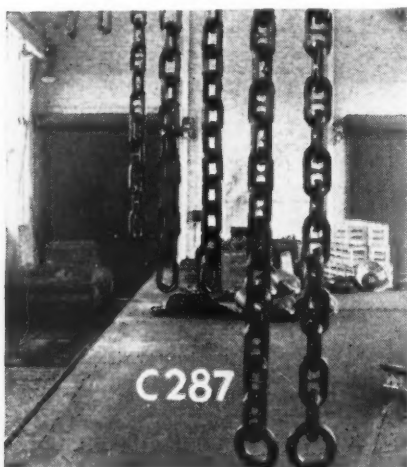


R-338. Manganese steel combination type chain and elevator buckets.



R-74. 70' of No. 111 manganese steel conveyor chain for sand and gravel plant.

Austenitic manganese steel, unequalled in its resistance to shocks, pressure and abrasive wear is more widely employed in construction machinery than many users of this equipment realize.



C-287. Two types of Amsco dragline chain.

These applications of "the toughest steel known" include chain and fittings for dragline buckets, elevator and conveyor chain and buckets; sprockets, rollers and sheaves; dipper buckets and parts; dipper teeth; crawler treads; bulldozer edges and corner bits; and wearing parts

for asphalt and concrete mixers. In these and other applications, the toughness and durability of Amsco Manganese steel has returned its cost many times over in construction work of all kinds.

Take chain, for instance. The two most

important requisites—durability and freedom from breakdown—find their highest development in Amsco Manganese Steel Chain. Having a test-bar tensile strength of 100,000-130,000 lbs. and a developed-in-service hardness up to 550 Brinell, combined with a tough, shock-resisting body metal, manganese steel chain withstands for long periods abuse that quickly destroys other chain.

Send for Bulletin 1143-CI, "Manganese Steel for the Construction Industry."

Joliette Steel Limited, Joliet, Quebec, owned by American Brake Shoe Company, produces and sells Amsco Manganese Steel Castings in Canada.

AMSCO

Foundries at

Chicago Heights, Ill.; New Castle, Del.;

Denver, Colo.; Oakland, Calif.;

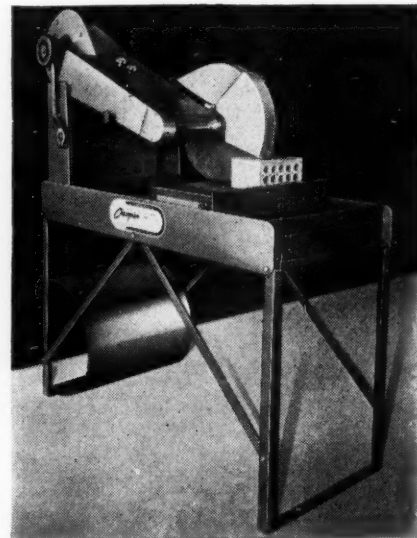
Los Angeles, Calif.; St. Louis, Mo.

Offices in Principal Cities

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS • ILLINOIS

AMERICAN
Brake Shoe
COMPANY

PORTABLE MASONRY SAW—New portable dustless masonry saw for accurately cutting tile, brick and concrete block on job is said to bridge the gap between wood cutting and



metal cutting. It has self-contained water supply system and continues many features which contractors demand in practical high-speed construction. Blades, chisels, marking pencils, hammers and other pertinent tools are kept in cabinet under the carriage of Champion saw.—**Champion Mfg. Co., 1307 Washington Ave., St. Louis 3, Mo.**

GRIFFIN

**R
I
F
F
I
N**

**WELLPOINT
SYSTEMS**

**JETTING
PUMPS**

**FOR SALE
RENT**

Prompt Shipments

Send for our New 60 page
illustrated catalog

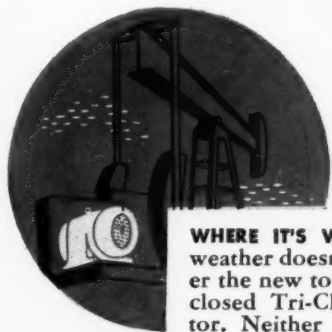
"GRIFFIN POINTED WELLPOINT
FACTS" check full of latest information on Wellpoint Systems for dewatering, emergency and permanent water supply systems, also information on pressure pumps and data for jetting.

GRIFFIN WELLPOINT CORP.

881 EAST 141ST ST. • NEW YORK 54, N.Y.

Phones: ME1rose 5-7704-3-6

FOR TODAY'S **TOUGHER JOBS,** HERE'S A NEW **TOUGHER MOTOR**



WHERE IT'S WET Wet weather doesn't bother the new totally-enclosed Tri-Clad motor. Neither do frequent "washdowns" in food plants.



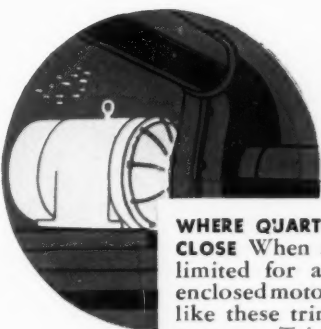
WHERE IT'S CORROSIVE Acids, alkalis, and fumes are kept out of these new Tri-Clads. Cast-iron enclosures are corrosion-resistant, extra strong.



WHERE IT'S DIRTY Dirt and dust can't get into these Tri-Clads to shorten their life. Smooth surfaces are convenient to clean.



WHERE IRON DUST FLIES Harmful iron dust and metal filings can't get past the inner wall. Bearings are protected from dust.



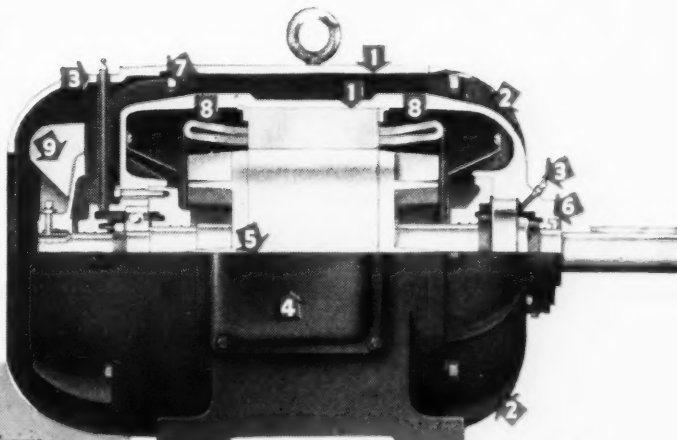
WHERE QUARTERS ARE CLOSE When space is limited for a totally enclosed motor, you'll like these trim, compact new Tri-Clads.



WHERE EXPLOSION HAZARDS EXIST The new Tri-Clad motors are available in explosion-proof constructions where needed.

THE G-E **TRI-CLAD** TOTALLY ENCLOSED MOTOR (1 TO 1000 HP)

In 1940 you welcomed the Tri-Clad open motor with its *extra protection features*. More Tri-Clads have since gone into service than any other integral-horsepower motor. Now G.E. is ready with a new line of tough, totally enclosed Tri-Clad motors for use in adverse atmospheres. *We believe they are industry's most dependable motors.* Their longer life and lower maintenance will make them a sound investment on almost every job. Apparatus Dept., General Electric Co., Schenectady 5, N. Y.



10-POINT PROTECTION

1. A cast-iron, double-wall frame completely encloses and protects the windings and punchings.
2. Corrosion-resistant cast-iron end shields are machined to provide a tight seal, and protect the motor from dust, dirt, and moisture. Primer and finish coat of Glyptal® varnish affords high rust-resistance.
3. A pressure-relief greasing system, which can be packed with long-life lubricant, protects the bearings.
4. The cast-iron conduit box is diagonally split for easy wiring. Boxes are independently explosion-proof on Class I motors.
5. Nonshrinking compound around motor leads protects motor interiors from dust and moisture at the point where leads pass through the frame.
6. Rotating labyrinth seal further protects motor interior from damage by foreign matter.
7. Large air passages provide adequate protection from overheating. They're easy to keep clean and open, too.
8. Modern, "ageless" insulation treatment includes windings of "Formex magnet wire."
9. The powerful external fan is removable to simplify maintenance; nonsparking type in explosion-proof motors.
10. Individual dynamic balance of rotors and external fans protects against vibration hazards, even under severe operating conditions.

FOR THE COMPLETE STORY

Apparatus Department, Section 750-278C
General Electric Company
Schenectady 5, N. Y.

- ☐ Please send me GEA-4400, which describes the new Tri-Clad totally enclosed motors.
- ☐ Please send me GEA-4131, "Motors and Control for Hazardous Locations."

NAME _____

COMPANY _____

ADDRESS _____

80330

®Trade-mark Reg. U. S. Pat. Off.

GENERAL ELECTRIC



THE HIGHWAY MODEL DD MOTOR DRIVEN SAND AND CINDER SPREADER

The Model DD Highway Spreader clamps onto the tail gate of any standard dump truck permitting one man to cast a uniform swath of sand or cinders 8 to 60 feet wide at truck speeds up to 35 miles per hour. Simple adjustment keeps spreader in horizontal position to cast material under and ahead of rear truck wheels permitting truck to travel ahead of traffic with safety. Material is fed into hopper by gravity—no shoveling is required. Unit is equipped with adjustable feed gates controlling thickness of spread and the throttle on the 1½ H.P. Briggs and Stratton gasoline motor determines the width of spread. Widely used for ice control work in winter, the Highway Model DD is also ideal for seal coat work and dust control in summer. Write for descriptive literature.

THE HI-WAY MODEL R MATERIAL SPREADER

Offers these time-saving profit-making features

- Spiral feed roller with agitator-conveyor provides fast, accurate distribution of material. Adjustable feed gate controls desired thickness of spread. Width of spread is adjustable from one foot to full width of spreader.
- Reversible transmission on both feed roller and agitator-conveyor permits quick and easy change from forward to reverse motion simply by shifting lever.
- Swivel type self coupling adjustable hitch allows traction wheels to remain in constant contact with ground regardless of position of truck or spreader. Entire unit is balanced for easy hook-up to truck.



WRITE FOR COMPLETE DETAILS

HIGHWAY EQUIPMENT COMPANY

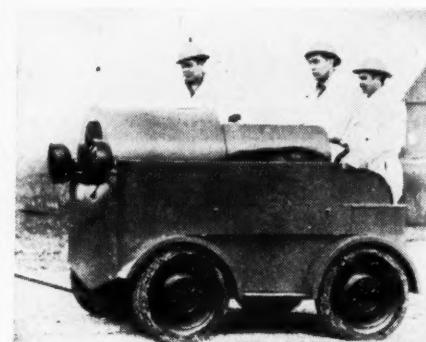
602 D Avenue, N. W.

Cedar Rapids, Iowa

Manufacturers of the world's most complete line of spreaders

Sold and distributed by leading Construction Machinery Dealers throughout the United States and Foreign Countries.

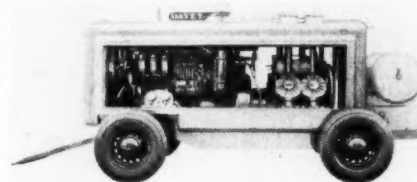
FIRE FIGHTER—New type of fire extinguishing unit designed to furnish effective fire protection for outdoor industrial fire hazards has capacity of 750 lb. of low-pressure liquid carbon dioxide and 32 gal. of mechanical foam solution. Its two specially engineered, long-range carbon dioxide nozzles, each with 100 ft. of ¾-in. hose, have combined dis-



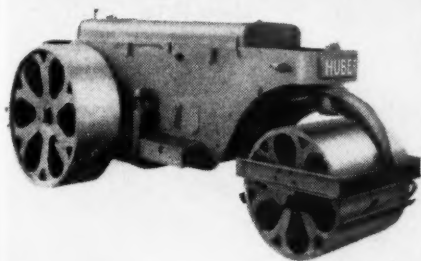
charge rate of 400 lb. of carbon dioxide per minute. Foam gun, on 100-ft. ¾-in. hose line has discharge rate of 18 gpm., with pressure supplied by carbon dioxide. Unit is compact four-wheel trailer, using standard automobile wheels and front axle assembly and 6:00x16 tires, with wheelbase of 52 in. and overall height of 5 ft. 4 in.—Cardox Corp., Bell Bldg., Chicago, Ill.

MASONRY SAW—New Model EKD saw has knock-down style frame designed for assembly with bolts. Cutting head is completely welded and assembled. Only frame need be dismantled when transporting saw from job to job. Variety of frame sizes can be used with 12- or 14-in. blades.—Clipper Mfg. Co., 4030 Manchester St., St. Louis 10, Mo.

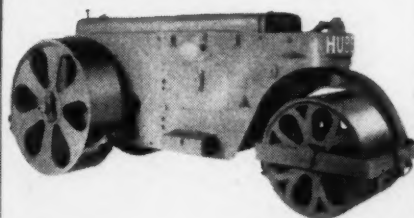
COMPRESSOR—Known as 315-W (gas) and 315 WD (diesel), new compressor unit produces 315 cu. ft. of free air per minute at 100-lb. pressure. It is available in standard skid, steel wheel trailer, and pneumatic-tired trailer mounting styles, and flanged wheel types for railroad



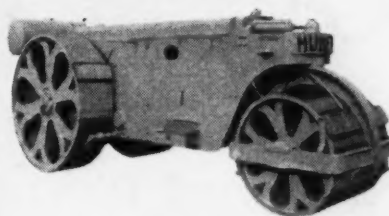
work. On trailers, spring-mounting is included without extra cost. Compressor unit consists of two banks of three cylinders, each bank being arranged in W form. This construction, together with short 4 in. piston stroke, reduces compressor vibration to minimum.—Davey Compressor Co., Kent, Ohio.



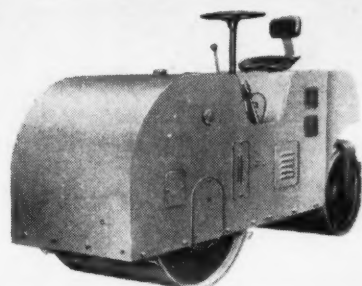
● HUBER 5 and 6 TON — 3 Wheel Roller



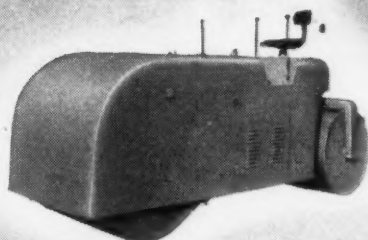
● HUBER 8 TON — 3 Wheel Roller



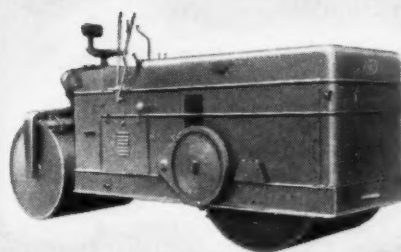
● HUBER 10 and 12 TON — 3 Wheel Roller



● HUBER 3-4 TON Variable Weight Tandem Roller



● HUBER 5-8 TON Variable Weight Tandem Roller



● HUBER 8-12 TON Variable Weight Tandem Roller

What Do You
Need in a
**ROAD
ROLLER?**

It is just good judgment on the part of everyone responsible for building or maintaining good roads to answer this question by saying, "We want rollers that will do the job **BETTER** than it has ever been done before." Right! and HUBER, with a seasoned and practical knowledge of your

needs, has built just such a line of 3 wheel and tandem rollers.

So, no matter what your job is, there is a HUBER Roller, either 3 wheel or tandem, of the right size to do the work better, faster, and more economical.

Ask your Huber Distributor about this.

✓
**CHECK THESE 3-
WHEEL HUBER ROLLER
FEATURES**

- Hydraulic steering, quick and easy.
- Short wheel base for easy maneuvering—easy handling.
- Simplified design for a minimum of maintenance.
- Plenty of speed, power, and stamina.

THE **HUBER** MFG. COMPANY • MARION, OHIO, U. S. A.

HUBER

3 Wheel • Tandem
**ROAD ROLLERS
MAINTAINERS**

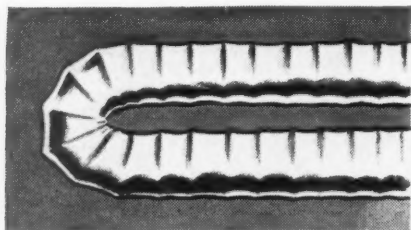
FOR BETTER VENTILATION

in Tunnel and Sewer Construction . . .

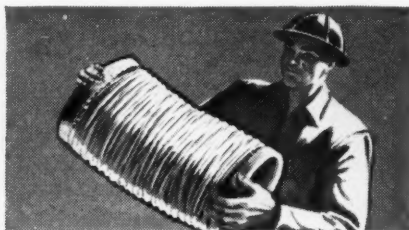
**NEW DU PONT
HELICAL-TYPE
"VENTUBE"
(NON-COLLAPSIBLE)**

SEND
COUPON FOR
DETAILS

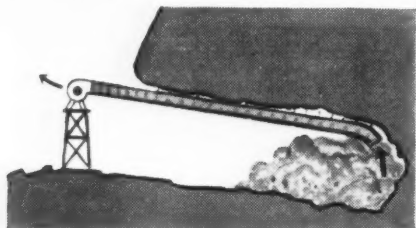
NEW AND BETTER! Gives 60% more suction air flow than the regular non-collapsible "Ventube"* (at 2½-inch water tube suction). It has a special helical spring made of tempered steel. Very light in weight.



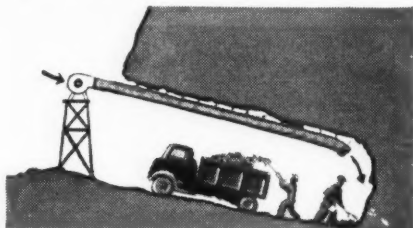
BENDS BACK ON ITSELF without appreciable loss of air flow—exhausting 8 times more air than regular non-collapsible "Ventube" when doubled back.



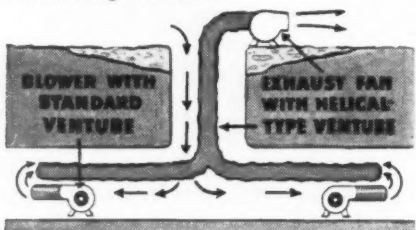
FOLDS TO 1/11th of full size (like an accordion). Easy to handle or store. Weighs only half as much as regular non-collapsible "Ventube."



SUCKS FOUL AIR out with exhaust fan. After a blast, this prevents the circulation of dust and foul air through the entire length of a tunnel.



BRINGS FRESH AIR in with blower fan. Use of a reversible fan permits exhaust action after blast and blower action while men work at face.



FOR TOUGH JOBS, solve any problem with combination of Helical-Type "Ventube" for exhaust and standard "Ventube" for blower at same time.

*"VENTUBE" is Du Pont's trade mark for its flexible, synthetic-rubberized ventilating duct.

DU PONT "VENTUBE"

Reducing Costs Through
Better Ventilation



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.), Fabrics Division, Fairfield, Conn.

Please send me all the facts on the new cost-saving Helical-Type "Ventube."

Name _____

Firm _____

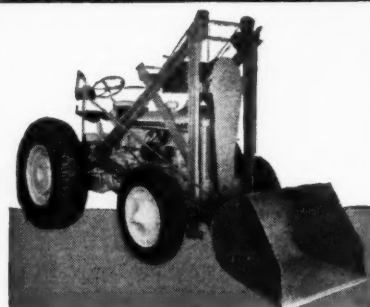
Address _____

WELDED SHOVEL DIPPER—To meet demands for dipper with optimum durability and overall weight, Amsco all-manganese-steel welded-type dipper, when fitted with door and bail of adequately strong design, is light in weight. Use of austenitic manganese steel as sole material of construction in this dipper, except for small, complementary parts, provides maximum resistance to fracture and wear. Over-lapping, rab-



beted joints leave grooves for welded bead. Parts are fitted together with round plugs, around which likewise weld metal is deposited. Worn front may be removed and new one rewelded in place

(Continued on page 140)



FRONT END LOADERS

for Industrial Tractors
Extensible Booms—8' Lift
½ and ⅝ cu. yd. Capacity

Other Products
CONCRETE VIBRATORS
Gasoline Engine and
Electric Motor Driven Models

HEATING KETTLES
for Asphalt and Tar

AGGREGATE DRYERS
for Stone and Sand

ASPHALT PLANTS
Portable — Stationary

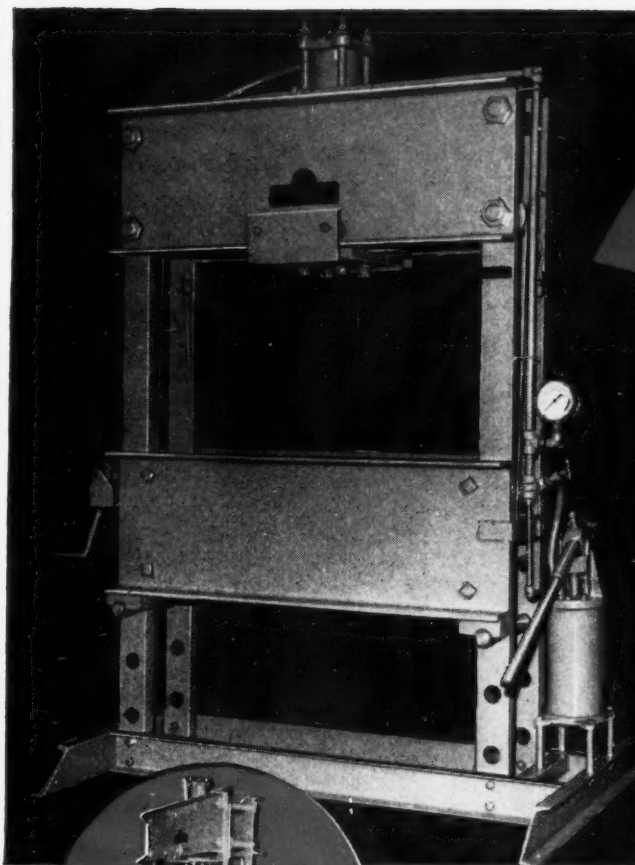
WRITE FOR CIRCULARS

White Mfg. Co.

ELKHART

INDIANA

RODGERS SHOP PRESSES



100-150 TON
rugged and flexible

... for
tough maintenance,
service and
special work...

SPECIFICATIONS

100 TON SHOP PRESS

Specifications	Bolster Opening		
	Standard	18"	24"
Model No. 108A			
Overall Height—6½" Ram Travel	85½"	85½"	85½"
Overall Height—13" Ram Travel	94¾"	94¾"	94¾"
Floor Space — Base	44"x63½"	44"x63½"	44"x63½"
Hoist Extends Beyond Base	9"	9"	9"
Pump Handle Extends Beyond Base	1¾"	4½"	7½"
Width Between Side Members	45"	45"	45"
Depth Between Side Members	8½"	14"	20"
Depth Between Bolsters (Work Table)	12½"	18"	24"
Maximum Daylight	35"	35½"	35½"
Minimum Daylight	7"	7½"	7½"

150 TON SHOP PRESS

Specifications	Bolster Opening		
	Standard	18"	24"
Model No. 109A			
Overall Height—7½" Ram Travel	89"	89"	89"
Overall Height—13" Ram Travel	97½"	97½"	97½"
Floor Space — Base	44"x70½"	44"x70½"	44"x70½"
Hoist Extends Beyond Base	9"	9"	9"
Pump Handle Extends Beyond Base	1¾"	4½"	7½"
Width Between Side Members	48"	48"	48"
Depth Between Side Members	8½"	14"	20"
Depth Between Bolsters (Work Table)	12½"	18"	24"
Maximum Daylight	35½"	35"	35"
Minimum Daylight	7½"	7"	7"

The improved
Rodgers Heavy Duty
Shop Presses are de-
signed to handle those 101
tough pressing, squeezing
and forcing jobs you run
up against so often. Both

the 100 and 150 ton models offer a versatility
of use not found in any other tool.

Rodgers Shop Presses have a moveable bol-
ster which is simply raised or lowered by a
crank and positioned by pins in the frame. The
cylinder is adjustable across the entire frame
width and may be mounted inside the top
frame or suspended below it. Open sides of the
frame allow long pieces to extend beyond width
of the press. Construction is of rolled steel
plate. Power is supplied by the Rodgers 4-speed
Hand Pump conveniently mounted on the side.
A Rodgers Power Pump Unit is available when
desired.

You will save time, labor and trouble with
a Rodgers Shop Press — write for details.

Matched set of "V" blocks are included as standard equipment
for both 100 and 150 ton presses.

The new Rodgers "Sixty"—60 ton Shop Press has the same fea-
tures as the larger models—ideal for hundreds of uses. Write
for literature.



Rodgers Hydraulic, Inc.

hydraulic power equipment

7403 Walker St., St. Louis Park, Minneapolis 16, Minn.



Shop Presses



Crawler-Track Presses



Power Pump Units

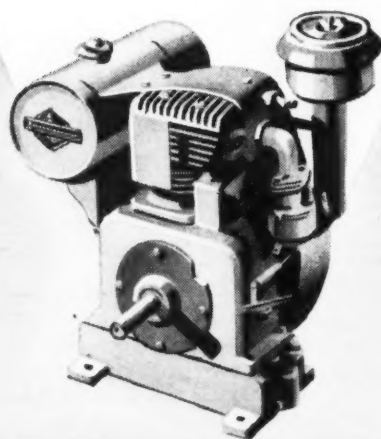


Portable Presses

BE SURE— Insist on Equipment Powered by a BRIGGS & STRATTON ENGINE

Maximum performance (1), long life (2), and freedom from servicing troubles (3) should be given the most important consideration in the purchase of gasoline powered appliances, farm machinery and industrial equipment. To insure getting "all three" — users, dealers and manufacturers are careful to choose equipment that is powered by Briggs & Stratton air-cooled engines. Today's demands are tremendous — but our increased production is solving that problem. It will pay you to wait a little longer to have equipment that's powered "right"—with Briggs & Stratton engines—the world's finest.

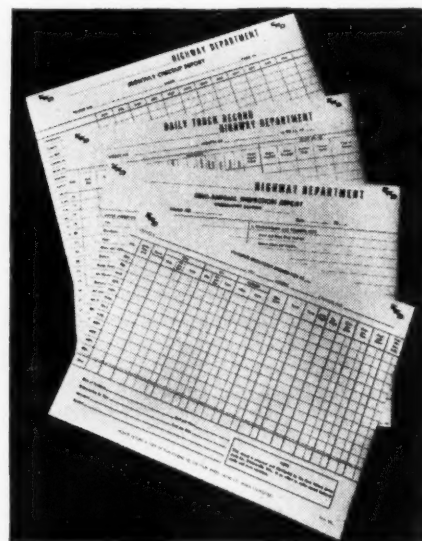
BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.



(Continued from page 138)

without destroying back. Dipper is made in capacities of $\frac{3}{4}$ cu. yd. and up. Sizes $\frac{3}{4}$ to 2 cu. yd. are made in two body pieces, front and back; sizes over 2 cu. yd. are made in four pieces—front, back and two side plates.—American Manganese Steel Division, American Brake Shoe Co., Chicago Heights, Ill.

TRUCK COST RECORDS — Complete set of sample forms required to set up simplified system of keeping operating cost records is result of system developed over 35 years of truck manufacture and repair. This service aids owners who do not wish to set up elaborate cost keeping system and answers such ques-



tions as: Is truck efficient or has it outlived its usefulness? Is gas mileage high? Low? Why? Which is best size truck for job? Which is best truck for job? Only four forms are used: Daily driver's report, repair labor slips, monthly report and yearly report. Requests for sample forms should be mailed to **Cost Records Department, Service Division; The Four Wheel Drive Auto Co., Clintonville, Wis.**

BLAST CLEANER — Vacu-Blaster, new blast-cleaning device has vacuum return system, which permits no abrasives or other particles to escape into open. Operated in much the same fashion as simple household vacuum cleaner, machine may be used without special precautions or preparations. No masks, goggles, or protective clothing are needed. Many types of abrasives may be used, depending upon nature of work to be done and finish desired. Spent abrasive is reclaimed by Vacu-Blaster and re-used as long as it remains effective.—**Vacu-Blast Co., Inc., 1045 Broadway, Burlingame, Calif.**

METAL PAINTED WITH
RED LEAD
GETS PLUS
PROTECTION



Red Lead **halts Rust-Producing** **ELECTRO-CHEMICAL ACTION**

No other protective paint for metal has ever known such wide acceptance by industry, through the years, as Red Lead. And recent scientific research has disclosed that Red Lead's outstanding performance results from basic characteristics of the pigment itself.

Not the least important of these is the ability of Red Lead to halt electro-chemical action—the fundamental cause of rusting.

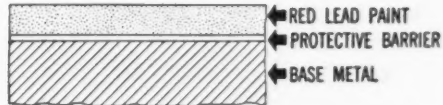
In this action weak currents are generated, due to physical and chemical differences in the metal and to other factors. These lead to corrosion of the iron.

These factors are always present, but their effects are eliminated by Red Lead.

Here's what happens: Red Lead, because of its singular composition, possesses properties which enable it to form a compact, tightly adherent, protective film, located at the interface of the metal and the paint coating. See cross section diagram above.

This film—so thin that it is not apparent to the human eye—is in very intimate contact with the metal, and its formation halts electro-chemical action—and the corrosion of the metal.

Once formed, it is essential that the continuity of the film be maintained—if the shield is to be effective. When Red Lead pigmented paint is used, any small breaks in the protective shield, due to abrasive action or otherwise, are readily healed. The metal remains in a rust-inhibited condition as long as Red Lead coats the surface.



The invisible safeguard against corrosion
This diagram shows the interfacial film, located at the metal and paint-film interface. The formation and the maintenance of this shield by Red Lead halts electro-chemical action . . . safeguards the metal against rust.

Specify RED LEAD for All Metal Protective Paints

The value of Red Lead as a rust preventive is most fully realized in a paint where it is the only pigment used. However, its rust-resistant properties are so pronounced that it also improves any multiple pigment paint. No matter what price you pay, you'll get a better paint for surface protection of metal, if it contains Red Lead.

Write for New Booklet "Red Lead in Corrosion Resisting Paints" is an up-to-date, authoritative guide for those responsible for specifying and formulating paint for structural iron and steel. It describes in detail the scientific reasons why Red Lead gives superior protection. It also includes typical specification formulas. If you haven't received your copy, address nearest branch listed below.

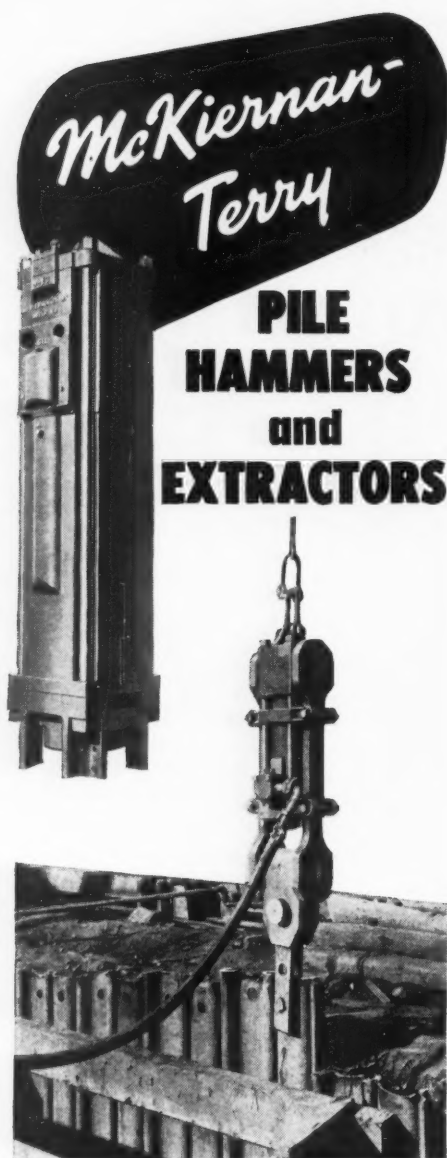
* * *

The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.

NATIONAL LEAD COMPANY: New York 6; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6. (National Lead Co. of Mass.); Philadelphia 7. (John T. Lewis & Bros. Co.); Pittsburgh 30. (National Lead Co. of Pa.); Charleston 25, W. Va. (Evans Lead Division).



Dutch Boy
Reg. U. S. Pat. Off.
Red Lead



On construction projects of unlimited variety, McKiernan-Terry Pile Hammers and Pile Extractors have for the past fifty years been building a world-wide reputation for speed, power, safety and dependability. Greatly expanded manufacturing facilities now make possible prompt deliveries of double-acting hammers in ten standard sizes; double-acting extractors in two sizes; single-acting hammers in five. For full information, write for free McKiernan-Terry Bulletins No. 55 and No. 57

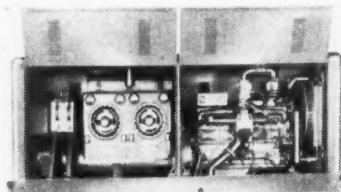
McKIERNAN-TERRY CORPORATION

Manufacturing Engineers

14 Park Row New York 7, N. Y.

MK-1006

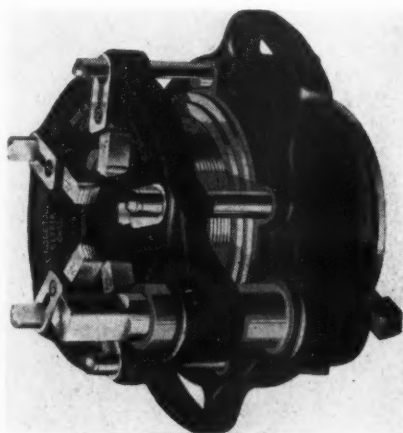
ARC WELDER — Two-operator gasoline-engine driven arc welder consists of two 300-amp. generators on common shaft supplied with separate excitation from common exciter. This double unit is directly



connected to 8-cylinder Chrysler industrial engine. Two operators can work independently of each other. Paralleling switch is provided to turn unit into single operator 600-amp. unit.—Hobart Brothers Co., Troy, N. Y.

ALL-POSITION ELECTRODE — New Airco No. 87 electrode is general purpose, mild steel electrode operating well on d.c. straight or reverse polarity and on a.c. producing weld metal of high mechanical properties. It is especially recommended for low-cost, single- or multiple-pass welding on plates or sections where fit-up is poor or work is rusty or dirty. This extruded-coated rod is now available in quantities. It features production of excellent welds over wide current ranges for any given diameter. Characteristics are the same when using d.c. straight polarity, d.c. reverse polarity or a.c. —Air Reduction Sales Co., 60 East 42d St., New York 17, N. Y.

GEARED PIPE THREADER — Quick-setting workholder and new balanced loop handles are two innovations on new 4P geared pipe threader. Workholder enables work-



er to set threader exactly to size before being placed on pipe. Balanced loop handles on inclosed gear case prevent slipping or tipping over.—Ridge Tool Co., Elyria, Ohio.

Worthington-Ransome Blue Brute Distributors

See ad on page 143 for list of equipment in each line

Worthington-Ransome Distributors

Ala., Birmingham, Construction Equip. Co.
Ala., Montgomery, Burford-Toothaker Tractor Co.
Alaska, Anchorage, Airport Machine & Storage Co.
Ariz., Phoenix, Lee Redman Equipment Co.
Cal., San Francisco, Coast Equip. Co.
Los Angeles, Golden State Equip. Co.
Colo., Denver, Power Equipment Company
Connecticut, New Haven, Wilhelm-Davies Co., Inc.
Fla., Miami, Allied Equip., Inc.
Orlando, Highway Equip. & Supply Company;
Tampa, Epperson & Company
Ga., Atlanta, Tractor & Machinery Company
Ida., Boise, Olson Manufacturing Company
Iowa, Cedar Rapids, McNall Machy. & Supply Co.
Ill., Chicago, Chicago Construction Equipment Co.
Ky., Harlan, Croushorn Equip. & Supply Co.
Maine, Portland, Maine Truck-Tractor Company
Mass., Allston, Boston, Clark-Wilcox Co.
Mich., Muskegon, Lakeshore Machy. & Supply Co.
Minn., Minneapolis, Phillippi-Murphy Equip. Co.
Miss., Jackson, Jackson Road Equip. Co.
Mo., Clayton, The Howard Corporation
Montana, Billings, Interstate Truck & Equip. Co.
Helena, Caird Eng. Works
N. C., Raleigh, Smith Eqt. Co.
N. J., No. Bergen, Amer-Air Comp. Corp.
N. M., Albuquerque, Bud Fisher Co.
Roswell, Smith Machy. Co.
N. Y., Albany, Milton-Hale Machinery Company
New York, Hodge & Hammond, Inc.
Olean, Freedom Eqt. Co.
Syracuse, Milton-Hale Mach. Co.
N. D., Fargo, Smith Commercial Body Works, Inc.
Ohio, Cincinnati, Carroll Edwards Co.
Okla., Oklahoma City, Townsco Equip. Company
Oregon, Portland, Andrews Equipment Service
S. C., Columbia, Smith Equipment Company
Tenn., Knoxville, Dempster Bros., Inc.
Memphis, Independent Tractor Co.
Nashville, Dempster Bros., Inc.
Texas, Amarillo, T. W. Carpenter Equip. Co.
Dallas, Shaw Equip. Co.
Houston, Contractors Eqt. Sales & Service Corp.
San Antonio, Patten Machy. Co.
Tex., Tyler, D. M. McClure Eqt. Co.
Vt., Barre, A. M. Flanders, Inc.
Utah, Salt Lake City, J. K. Wheeler Mach. Co.
Wash., Spokane, Andrews Equip. Service
Wis., Milwaukee, Drott Tractor Co., Inc.

Ransome Distributors

D. C., Washington, M. A. Doetsch Mach. Co.
Ill., Chicago, Thomas Hoist Company
Ind., Fort Wayne, American Steel Supply Co.
Ky., Paducah, Henry A. Pettey Supply Co.
La., New Orleans, Ole K. Olson Company
Md., Baltimore, Stuart M. Christliff & Company
Mich., Detroit, T. G. Abrams
Neb., Lincoln Highway Equip. & Supply Co.
N. Y., Buffalo, Murray Equip. Co.
O., Cleveland, H. B. Fuller Equip. Company
Pa., Philadelphia, Giles & Ransome
Pittsburgh, Arrow Supply Company

Worthington Distributors

Ark., Fort Smith, R. A. Young & Son
Little Rock, R. A. Young & Son
Ind., Indianapolis, Reid-Holcomb Company
Ky., Louisville, Williams Tractor Company
La., New Orleans, Wm. F. Surgi Equip. Co.
Md., Baltimore, D. C. Elphinstone, Inc.
Mass., Cambridge, Field Mach. Company
Mich., Detroit, W. H. Anderson Co., Inc.
Flint, Grandsen-Hall & Company
Mo., Kansas City, Mach. & Supplies Co.
N. Y., Buffalo, Dow & Co., Inc.
New York, Air Compressor Rental & Sales
O., Cleveland, Gibson-Stewart Company
Toledo, The Kilcorse Mach. Co.
Pa., Allentown, H. N. Crowder, Jr., Inc.
Easton, Sears & Bowers
Harrisburg, American Equip. Corp.
Oil City, Freeborn Equipment Company
Philadelphia, Metalweld, Inc.
Pittsburgh, Atlas Equip. Corp.
Wilkes-Barre, Ensminger & Company
Texas, El Paso, Equip. Supply Company
Va., Richmond, Highway Mach. & Supply Co.
Wash., Seattle, Star Machinery Company
Wyoming, Cheyenne, Wilson Equip. & Supply Co.

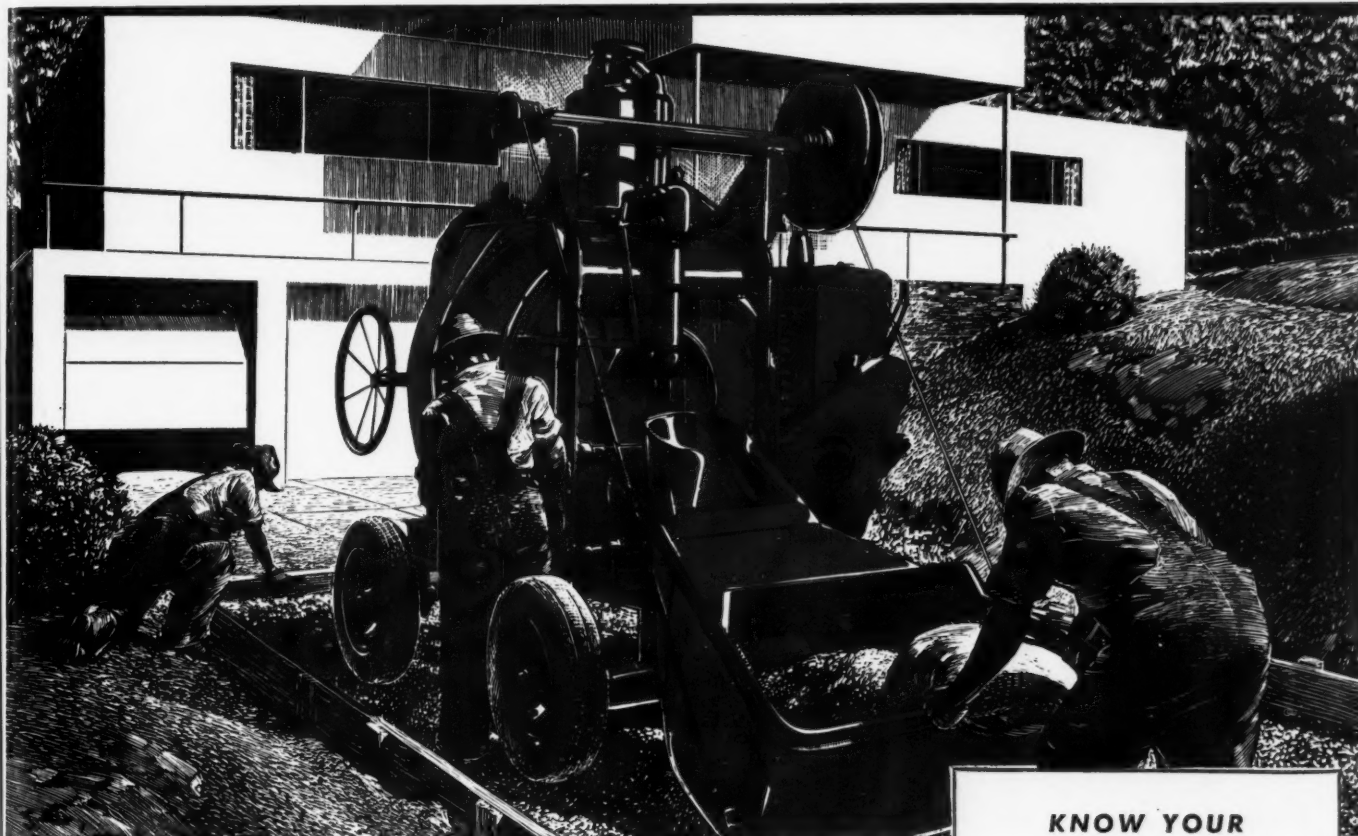
Buy Blue Brutes

Worthington Pump and Machinery Corp.

Worthington-Ransome Construction Equipment Division

Holyoke, Massachusetts

IMPORTANT "INNARDS" THAT MEAN LONGER LIFE



Ever stop to realize why so many men who work with and *know* concrete hold Ransome mixers so highly in their regard?

Let's just review some of the more important features that are engineered into the "innards" of these famous Blue Brutes. We're sure you'll then agree with the reasons for their popularity among construction contractors.

Drum rollers of genuine carwheel metal, ground to size, mounted and supported on two extra longitudinal members, each roller equipped with double Timken Roller Bearings . . . high carbon steel drum tracks welded to the drums and machined to a true circle . . . design of underslung frame

eliminates any possibility of concrete spillage on roller mechanism . . . steel drip rings around drum charge and discharge openings for added protection.

These and many other improvements developed during Ransome's 96 years of experience in mixer design and manufacture assure a smooth-running, long-lived mixer. To you, this means *more* concrete . . . at *lower* cost . . . year in and year out.

Blue Brute Portable Mixers Nos. 3½-S, 6-S, 11-S and 16-S are described in Bulletin 180-B. Consult your nearby Worthington-Ransome Dealer. He will supply you with this and with other facts that prove *there's more worth in Worthington.*

RE-14

BUY BLUE BRUTES

KNOW YOUR

BLUE BRUTES

Your Blue Brute Distributor will gladly show you how Worthington-Ransome Blue Brute Mixers and other construction equipment can put your planning on a profitable basis. His name is listed on page 142 Blue Brutes include:

RANSOME EQUIPMENT

Pavers, Concrete Spreaders and Finishers*, Portable and Stationary Mixers, Pneumatic Placing Equipment, Truck Mixers, Plaster and Bituminous Mixers and Accessories.

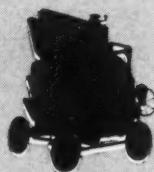
WORTHINGTON EQUIPMENT

Gasoline and Diesel Driven Portable Compressors, Rock Drills, Air Tools, Contractors' Pumps* and Accessories.

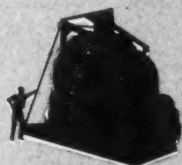
*To be announced.



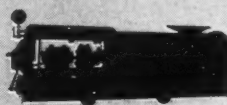
Truck Mixers
Capacities:
2, 3, 4½ cu. yds.



Portable Mixers
Capacities:
3½, 6, 11, 16, 28 cu. ft.



Big Stationary Mixers
Capacities:
28, 56, 84, 126 cu. ft.



Pneumatic Placer
Capacity:
7, 14, 28 cu. ft.

WORTHINGTON

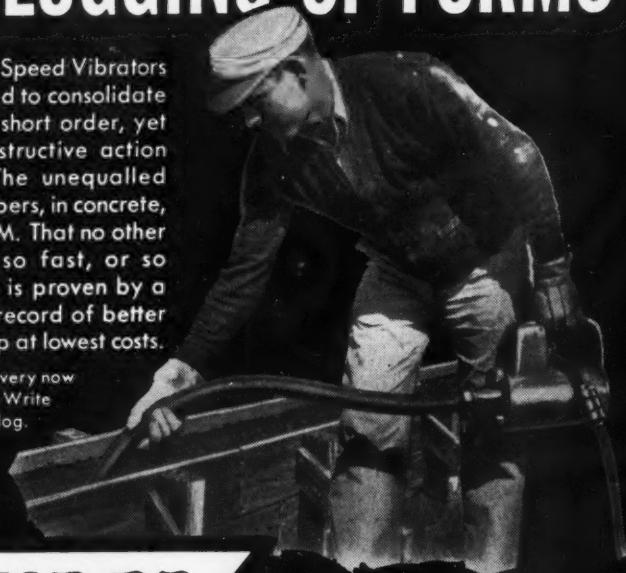


Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division, Holyoke, Mass.

NO SLUGGING OF FORMS

VIBER High-Speed Vibrators are designed to consolidate concrete in short order, yet without destructive action on forms. The unequalled speed of Vibers, in concrete, is 9,500 RPM. That no other method is so fast, or so economical, is proven by a worldwide record of better workmanship at lowest costs.

Immediate delivery now of all models. Write today for catalog.



VIBER

SINCE
1931

COMPANY

726 SO. FLOWER STREET
BURBANK, CALIFORNIA

ORIGINATORS

OF INTERNAL CONCRETE VIBRATION

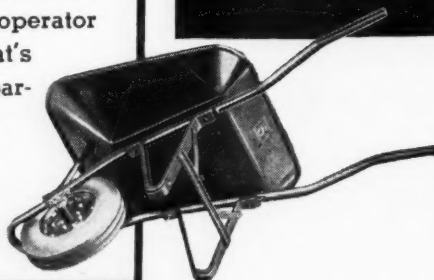


Down Hill ALL THE WAY!

Sterling barrows wheel so easily, they make it seem like going down hill all the way. Lightweight... well-balanced... equipped with modern, anti-friction bearings, Sterlings relieve the operator of fully 80% of the load. That's why they are the preferred barrow in all types of industries.

The demand for Sterlings continues to exceed the supply. Deliveries, however, will be stepped up as rapidly as conditions permit.

*Well
Balanced*
FOR
EASY WHEELING!



STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling WHEELBARROWS



Look for this Mark of
STERLING Quality



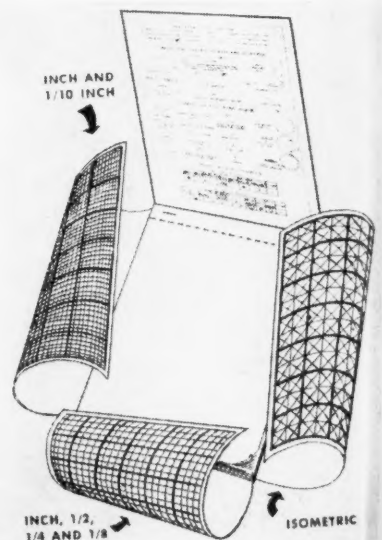
CONTINUOUS PRINTERS — New improved B-2 and B-3 table-type continuous printers offer number of postwar improvements that make possible faster exposure, finer reproduction, and greater operating efficiency, for intermittent or continuous duty. They expose direct



process black-and-white prints, blueprints, and ammonia-type prints, from tracings, charts, drawings, letters, etc. and produce clear, sharp, true-to-scale prints up to 44 in. wide in continuous operation; from cut sheets or roll stock, in any lengths, at speeds from 6 in. to 42 in. per minute.—Peck & Harvey, 5736 N. Western Ave., Chicago 45, Ill.

LIGHTWEIGHT CONVEYOR — New lightweight portable conveyor for industry is called Tote-All Zephyr. The 12-ft. model weighs only 135 lb. (without motor) and is made of special alloy steel, corrosion and abrasion resistant. Two lengths are available—12 ft. and 16 ft.; both models have 8-in. belt. Power is furnished by gasoline engine which is mounted above conveyor.—Material Movement Industries, 310 S. Michigan Ave., Chicago 4, Ill.

SCALE DRAWING PAD — "Jiffy Sketch" is name of scale drawing pad with which to make properly proportioned drawings without use of ruler, drafting board or T-square. It may be used in shop, field or office. Pad contains 75 sheets of high
(Continued on page 146)



Water gets taken for a Quick, Low-Cost Ride ...when dependable LE ROI engines furnish the power

Away it goes at the rate of 90,000 gallons per hour, yet pumping costs are unusually low when Le Roi engines furnish the power.

Some of this saving can be attributed to Le Roi's unique valve-in-head design that uses less fuel and produces more power. Le Roi dependability also plays an important part in keeping costs down. The extra-heavy crankshafts; oversize bearings; hardened steel valve inserts; positive pressure lubrication; and heavy-duty clutches provide trouble-free, reliable performance.

Because of this dependability and economy, Le Roi engines have been selected by many manufacturers. Yes, operating costs are lower when you use Le Roi-powered equipment. Write for bulletins or see your Le Roi distributor.

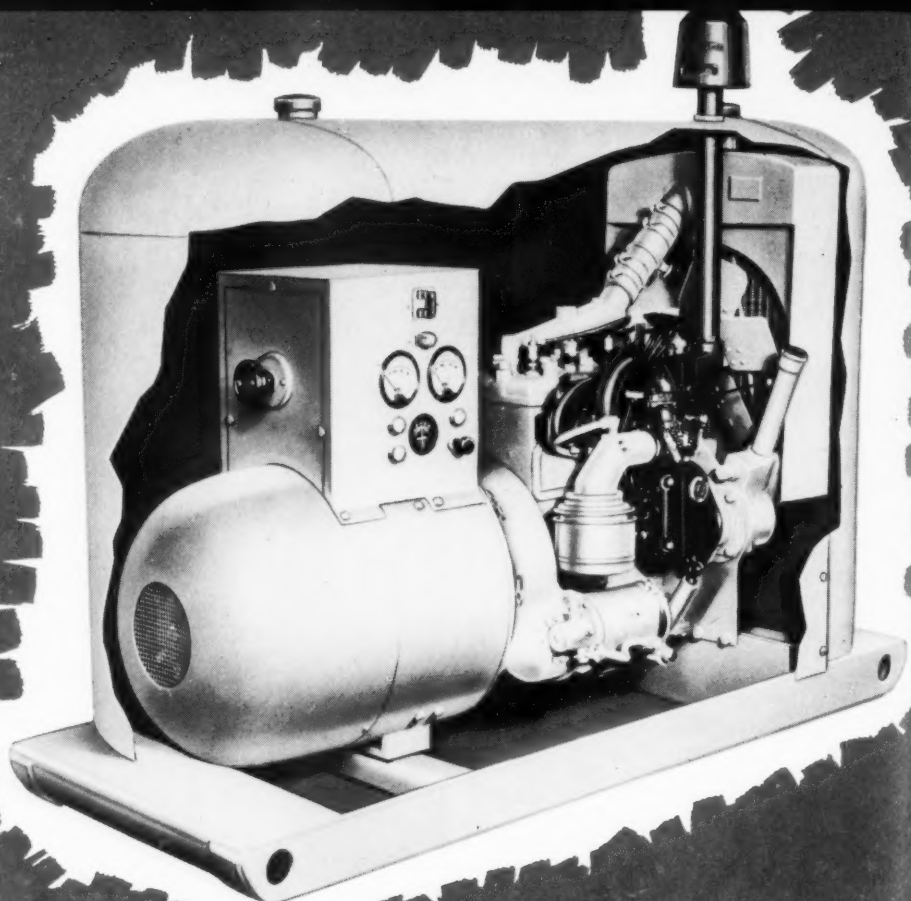
LE ROI COMPANY
Milwaukee 14, Wisconsin
New York • Washington • Birmingham
Tulsa • San Francisco



TURN THE PAGE



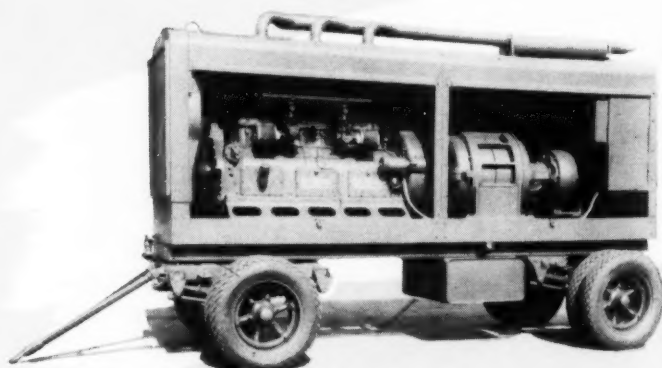
Cutaway section showing the compact arrangement of Le Roi packaged-type generator sets.



Big Surprises come in Small Packages ... especially in the "packaged" LE ROI engine-generator set with its surprisingly big savings to you

Available in 5, 10, and 15 KW sizes of 120-240 volt AC or 120 DC capacities, sturdy Le Roi packaged-type generator sets are full of surprises—surprises that mean low operating costs and less trouble. Here they are:

- These units are self-regulating and provide dependable performance for either constant or intermittent service.
- They require less attention than ordinary types. The generators are drip-proof, splash-proof, and rodent-proof. They resist moisture, rust, and corrosion.
- Illuminated control panel contains all the instruments necessary for the operation of both engine and generator.
- Dependable, heavy-duty, liquid-cooled Le Roi engines insure these units against electric power interruption.
- The great power reserve of Le Roi engines easily handles those conditions involving high ambient temperatures, dust, and overloads.
- Natural gas, butane, or gasoline may be used as fuels. Write for bulletins.



Le Roi also specializes in engineering and building custom generator sets to meet any requirements up to 250 KW. Shown above is a 125 KW Le Roi engine-generator unit mounted on a high-speed trailer. Send us your specific inquiries.

LE ROI COMPANY

Milwaukee 14, Wisconsin

NEW YORK • WASHINGTON • BIRMINGHAM • TULSA • SAN FRANCISCO

Again, it's

**LINK-BELT
SPEEDER**

*for Lowest Cost
Handling!*



Blue Diamond Corporation, (Los Angeles) have operated Link-Belt Speeder cranes for 30 years. Several in service now — and they say this K365, five months old, is the "finest of the lot." Superintendent Curry calls it the best machine he has used in his 21 years experience. Speed-O-Matic

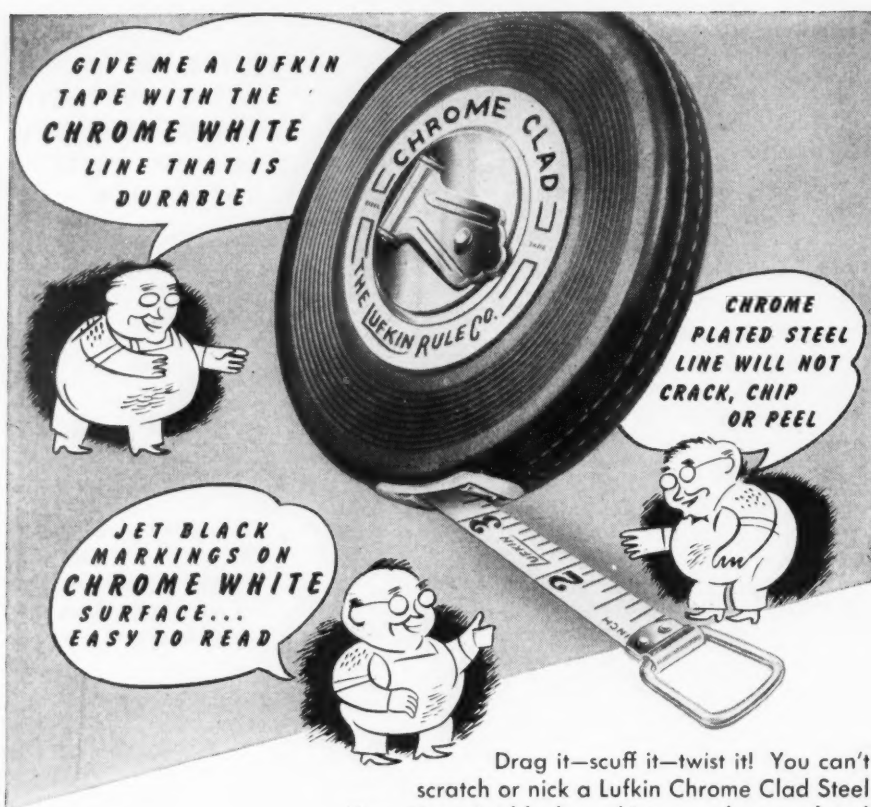
controls make it fast and easy to operate; it handles 1400 to 2000 tons per day — without a moment out for attention. "Millions of tons handled, at minimum service cost," is Manager's comment. No wonder they repeat on Link-Belt Speeders!

For Prompt, Efficient, Convenient Sales and Service:
There is a Link-Belt Speeder Distributor Located Near You

LINK-BELT SPEEDER

Builders of the Most Complete Line of
SHOVELS-CRANES-DAGLINES
LINK-BELT SPEEDER CORPORATION, 301 W. PERSHING ROAD, CHICAGO 9, ILL.
A DIVISION OF LINK-BELT COMPANY

★
Let's keep America
★ **AHEAD** ★
ON GOOD ROADS!



Drag it—scuff it—twist it! You can't scratch or nick a Lufkin Chrome Clad Steel Tape Line. Jet black markings on chrome plated steel line assure long wear and easy reading. Buy them from your dealer, and write for free catalog.

LUFKIN

THE LUFKIN RULE CO., SAGINAW, MICHIGAN, New York City



A MOUTHFUL at EVERY BITE

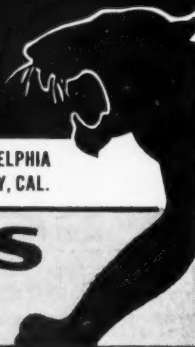


This is not only the claim of OWEN, the name symbolic of the highest grade Excavating and Handling Buckets for 40 years. — Operators everywhere, "on and off" the job, volunteer this testimony.

And—there's a reason. Owen-engineered buckets incorporate special features which have been continually improved.

THE OWEN BUCKET CO. Branches: NEW YORK • PHILADELPHIA
6020 Breakwater Avenue • Cleveland, Ohio CHICAGO • BERKELEY, CAL.

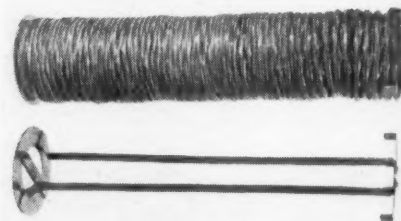
and **MORE BITES PER DAY**



(Continued from page 144)

quality tracing tissue, in cover jacket of four cardboard flaps. Various scales are printed on three flaps. To use pad cover flap is folded back and one of tissue sheets is then placed over scale desired. Drawing is made accurately to scale with aid of printed lines which show through tissue. Pad measures approximately 9x12 in. Sheets are perforated for easy removal. Information is printed on back of each cover flap—basic mechanical drafting standards, electrical, welding and architectural symbols; decimals of a foot; decimal equivalents of fractions, with circumferences and areas of circles.—Jiffy Sales Co., 1843 East 37th St., Cleveland 14, Ohio.

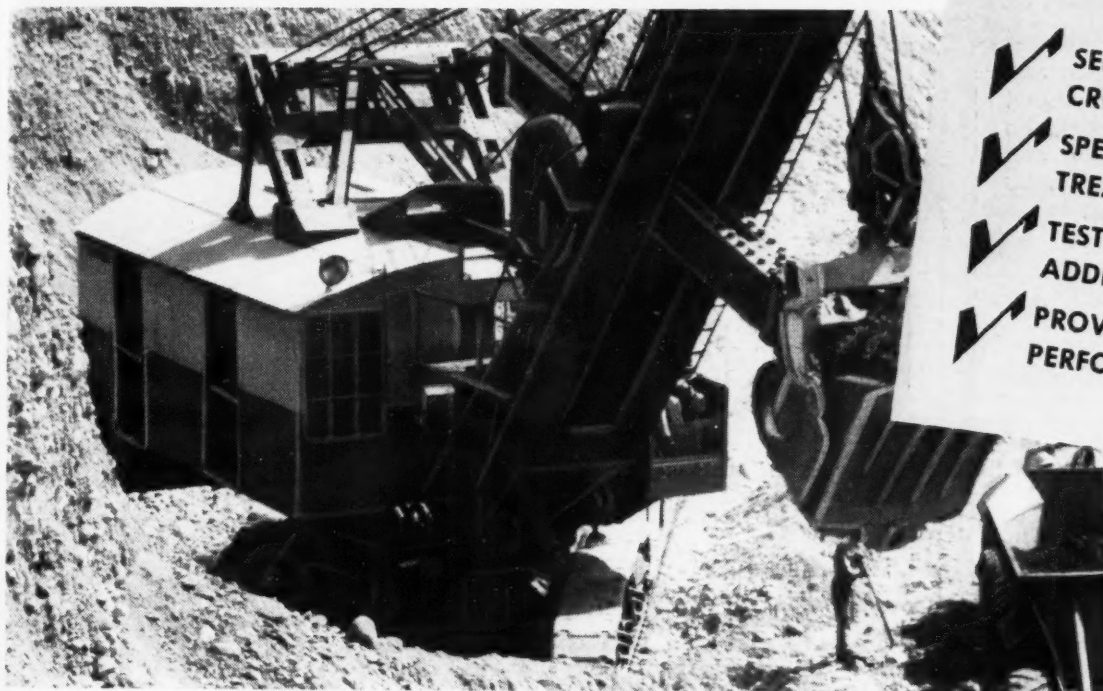
RETRACTABLE TUBE CARRIER—Combination carrier and storage rack for convenience in handling retractable tubing or storing it when not in use has been developed. Rack, called "Spira-Tote," comes in various sizes to accommodate various



lengths and diameters of Spiratube. Tubing, which is non-collapsible in operation, is easily piled upon rack and locked into position. Hinged extension pieces at top of rack turn to permit tubing to slip onto rack, then move out, locking tubing in place.—The Warner Brothers Co., Spiratube Division, Bridgeport 1, Conn.

CAMERA TRANSIT—A combination camera and surveyor's transit has been developed for obtaining ground control information necessary for aerial photogrammetry. Unit consists of Type 5078-E Keuffel & Esser transit combined with 4x5-in. plate camera, with telescope mounted on top of camera, which is fastened to upper limb of transit. Unit is used for terrestrial photogrammetry with camera transit set up successively at small number of points in area in which ground control is necessary and 12 photographs taken at 30-deg. intervals throughout circle at each of camera stations. By such means most of measurements needed for other control points in area can be made in office so that ground control survey costs can be cut as much as 50 percent.—Fairchild Camera & Instrument Corp., Jamaica, N. Y.

EXTRA QUALITIES-



- ✓ SELECTED CRUDE
- ✓ SPECIAL REFINING TREATMENT
- ✓ TESTED ADDITIVES
- ✓ PROVEN PERFORMANCE

SINCLAIR OPALINE TBT MOTOR OIL

Made specially for gasoline-powered bus, truck, tractor and construction equipment service... where the pull is hard and steady.

When heavy load imposes extra demands on engines of trucks, buses, tractors and construction equipment, the motor oil must possess *extra qualities*.

Sinclair OPALINE TBT MOTOR OIL is made with special additives to fortify it against oxidation tendency under high temperatures, discouraging gum, lacquer and carbon deposits. Special detergent qualities help keep engines clean; inhibitors protect against bearing corrosion and foaming.

Try this *extra-duty* oil for *extra-duty service*. It's made in grades to suit varied engine designs and operating requirements.

SINCLAIR LUBRICANTS-FUELS

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

Powerful Pulling and Pushing with Simplex Jacks

The numerous pulling and pushing jobs encountered in construction work can be most safely, easily and economically performed with Simplex Jacks.



**Steamboat
Ratchet Pulling Jacks**
are real savers of time and money on coffer dams, or concrete and steel construction requiring false work or framing. 8 and 15-ton capacity. Also available with lock-link hook ends.



Push and Pull Jacks
These powerful jacks are widely used for pulling together or pushing apart structural members; and in the erection of bridges, large tanks and heavy cement forms. No. 1524 (shown) 15-ton capacity. Other models 8 and 10-ton.



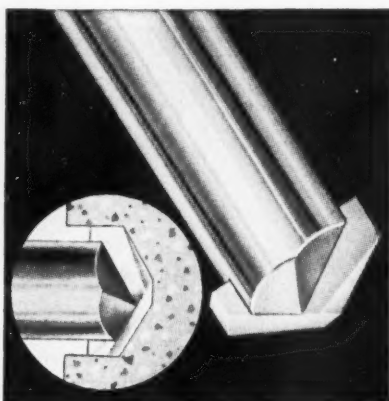
Shoring Jacks
Provide greatest safety factor in shoring work, timbering and for use as temporary columns and other supporting work. 25 and 35-ton capacities.

In construction or demolition work, walls or other vertical structures can be held rigid and secure by using Simplex Shoring Jacks to push and Simplex Pulling Jacks to pull against them. They are safe, efficient and easy to use.

Templeton, Kenly & Co.
Chicago 44, Ill.

SIMPLEX
WORLD'S MOST
COMPLETE
LINE OF
JACKS
LEVER
SCREW
HYDRAULIC

ROTARY MASONRY DRILLS —
Line of Kennadrills for rotary drilling in concrete, brick, slate, marble, limestone, plaster, glazed tile, asbestos, and other non-metallic construction materials have cutting tips of Kennametal. The drill is so designed that tip extends beyond diameter of



shank, thereby providing generous annular clearance space around shank for cuttings, minimizing possibility of binding. No starting punch is required on very hard or brittle materials, and glazed surfaces are not chipped or cracked because tip takes hold readily. Any rotary type of drill can be used to operate Kennadrills, available in nine sizes. —Kennametal, Inc., Latrobe, Pa.

ALTERNATING CURRENT MOTOR—New steel frame, a. c. motor has just been produced by Westinghouse Electric Corp. It is only two thirds the size of its cast iron predecessors. Reduction in size has been accomplished without sacrifice of electrical properties but with torque increase of 116 percent per pound of motor. It is claimed that bearings will need no attention for at least five years and shock resistance is increased many times. Company has designed completely new motor and planned manufacture in new factory designed for large scale production. Illustrated above are "Life-Line" motors on finishing line at Buffalo plant. —Westinghouse Electric Corp., Buffalo, N. Y.

TRUCK AND TRACTOR WINCHES
—Three sizes are now in production: 15,000, 30,000 and 60,000-lb. pull. Instantaneous change in direction is achieved in Rapid Reverse series at full load and under full speed by single straightline shift without engaging or disengaging engine clutch. Use of engine clutch is necessary only at beginning and end of job to engage and disengage power take-off. Reversing mechanism consists of double-ended modified jaw clutch sliding on splines or input shaft
(Continued on page 150)

POWER PLUS !



**ONE
MAN
GANG!**

**100%
SELF-CONTAINED**

SYNTRON

GASOLINE HAMMER PAVING BREAKERS



The explosive force of gasoline—driving a free Hammer Piston against the shank of the tool, makes short work of—

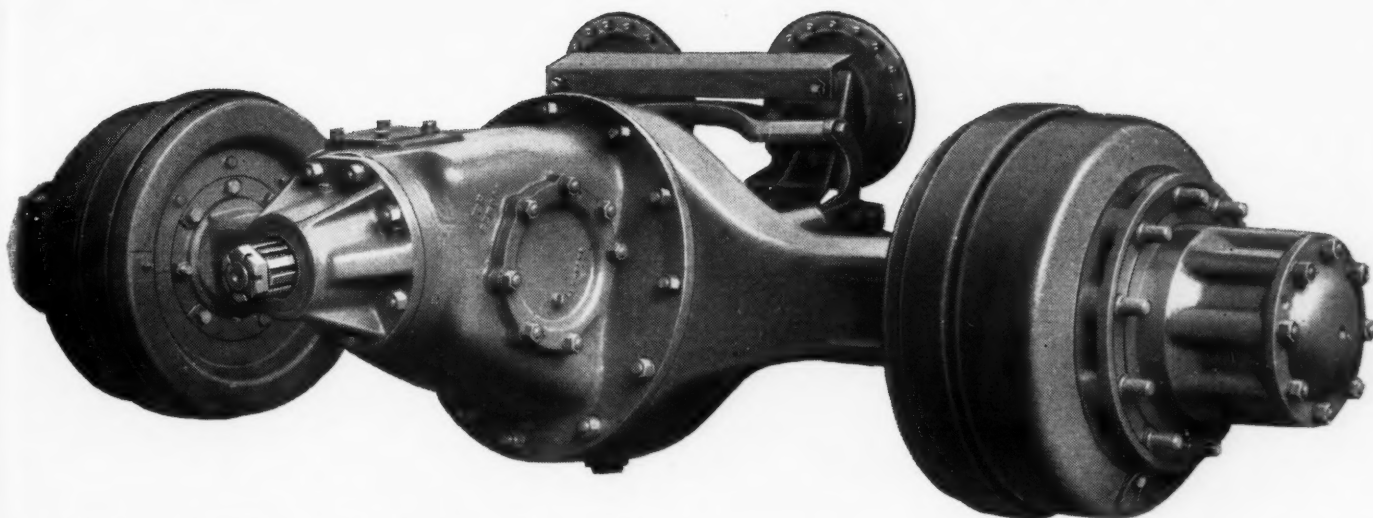
**BUSTING CONCRETE
CUTTING ASPHALT
DIGGING CLAY AND
HARD PAN**

**TAMPING BACKFILL
and numerous other
jobs.**

Write for free literature.

SYNTRON CO.
500 LEXINGTON HOMER CITY, PA.

NO COMPRESSOR
HOSE
BATTERY BOX
CABLE
SPRINGS
That's **SYNTRON**



New S&U 200 Series Single-Speed Double-Reduction*

New hypoid-helical double-reduction drive . . . new torsion-flow "Axaloy" axle shafts . . . new 9-16 tooth combination differential . . . new interjacent pinion shaft location . . . plus scores of other modern features. Data on ALUMINUM housing, brake shoes and hubs on S Series for weight saving available upon request.

READY NOW! TWO NEW HEAVY-DUTY AXLES!

Two new tough-as-nails Timken axles are ready to help you whip your heavy-duty hauling problems—the new S and U-200 Single-Speed Double-Reduction Axles and the new S and U-300 2-Speed Double-Reduction Axles.

Both are designed for modern high-power engines—the S Series for loads over 18,000 pounds, and the U Series for heavier loads and off-the-road operation. Both are bears for punishment—have more up-to-the-minute features than you can shake a prop shaft at. Both are in *full production now*—the only postwar heavy-duty axles ready to pitch in and start working for you immediately.

Operators who are using these new axles call them the *final answer to heavy-duty final drive problems*. For all that's modern and best in design and performance, specify Timken S or U Series Axles under the next heavy-duty trucks you buy.



TIMKEN AXLES

THE TIMKEN-DETROIT AXLE CO., DETROIT 32, MICH.
WISCONSIN AXLE DIVISION • OSHKOSH, WIS.
TIMKEN AXLE BRAKE DIVISION • DETROIT 32, MICH.



New S&U 300 Series 2-Speed Double-Reduction*

2-speed double-reduction drive doubles available gear combinations—gives greater pulling power and high road speeds in same truck. Equipped with famous Timken Easy Power Shift—no manual shifting required. Like S and U-200, S and U-300 offer option of new DP Heavy-Duty Hydraulic Brake or famous P Series Power Brake.

*FINAL DRIVES INTERCHANGEABLE IN THE SAME AXLE HOUSING



LIGHTER • FASTER • CHEAPER

No board is too tough for this new, powerful, high speed MallSaw that is priced within reach of every builder. It will rip or cross-cut any kind of rough or dressed lumber up to 2" leaving a square board end that assures better fitting and a better building. When equipped with a Mall long-wearing abrasive disc, it can be used for grooving Mortar joints, cutting and scoring tile, limestone, concrete and other aggregate compositions. The light weight, rust proof aluminum alloy housing, comfortable handle with trigger switch, and perfect balance make for easy handling. Equipped with Universal Motor. Available in two voltages 110-volt AC-DC or 220-volt AC-DC 60, 50 or 25 cycles. Has 6" diameter blade.

Ask your Supplier or write for literature and prices

MALL TOOL COMPANY, 7757 South Chicago Avenue, Chicago 19, Ill.
CONTRACTOR EQUIPMENT DIVISION

★ 25 Years of
"Better Tools for
Better Work"

Mall
REG. U.S. PAT. OFF.

**PORTABLE
POWER TOOLS**

CONTRACTORS RUBBER PRODUCTS available from Stock for immediate Delivery

**CONVEYOR, ELEVATOR and
TRANSMISSION BELTING**
all widths and plys

V-BELTS all sizes

HOSE all sizes

AIR	WATER	SUCTION	COMPRESSOR
FUEL	STEAM	WELDING	PILE DRIVERS
FIRE	VACUUM	DISCHARGE	ROAD BUILDERS

and BOOTS, DREDGE SLEEVES, PUMP DIAPHRAGMS, ETC.

and everything rubber for Industrial Requirements

PHONE . . WIRE . . WRITE

Write for new catalog

CARLYLE

**RUBBER
CO., Inc.**

62-66 PARK PLACE NEW YORK 7, N. Y.

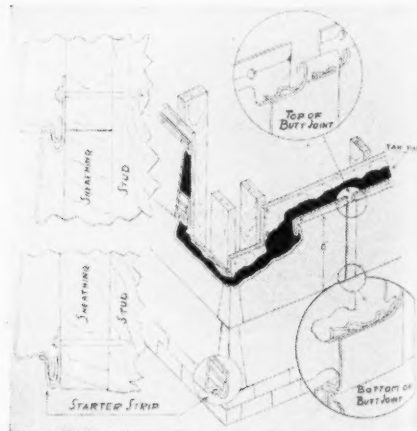
Phone: BArcley 7-9793

(Continued from page 148)

which meshes with clutch gears on either end of shaft. One of these clutch gears meshes directly with worm shaft and other meshes through reverse idler. Thus, complete control of forward, reverse and neutral is achieved by single straight-line shift. Shock of engagement at full load and speed is absorbed by torflex sprocket with rubber bushing. Multiple jaws on clutch are tapered so that engagement is maintained only if pressure on control lever is maintained. If operator lets go of lever, clutch returns to neutral and automatic brake on worm shaft stops all motion. This insures foolproof "deadman" control. For long hauls, lever may be latched in to give positive engagement.—**Gar Wood Industries, Inc., Detroit 11, Mich.**

MACHINERY LUBRICATORS—Designed in four sizes, with lubricant capacities ranging from ½ to 8 oz., pressure filled Gun-Fil lubricators automatically dispense oil or grease in measured, uniform flow to moving bearing, and stop feeding lubricant when bearing becomes motionless. These lubricators assure controlled lubrication over long period of time. Six interchangeable valves with distinctive colored caps for identification exert varying degrees of control of feed on greases of different densities.—**Gray Co., Inc., 60 11th Ave., N.E., Minneapolis 13, Minn.**

ALUMINUM BUILDING PRODUCTS—New line of aluminum building products ready for immediate delivery includes materials for all



types of homes, light commercial and industrial structures, aircraft hangars, etc. Four types of sheet roofing and siding are offered, as well as aluminum shingles with interlocking watertight sides and fitting top and bottom flanges.—**Reynolds Metals Co., Louisville, Ky.**

Fast
on the JOB,
Easy
on the OPERATOR!

MICHIGAN

MOBILE SHOVEL-CRANE

FULLY CONVERTIBLE

$\frac{3}{8}$ YD. and $\frac{1}{2}$ YD. SHOVELS
6 TO 12 TON CRANES

FINGERTIP
AIR CONTROLS
ONE-MAN
OPERATION
TRUCK MOBILITY

You can count on your operator maintaining high output rates with a MICHIGAN. It's fast-moving—both on the road and on the job. It's easy to handle, it's economical to operate. That's why it ranks so high in the estimation of operators and owners alike. With operators because its air controlled clutches respond instantaneously and smoothly to the touch of a finger. With owners because it gets every job done sooner, at minimum cost.

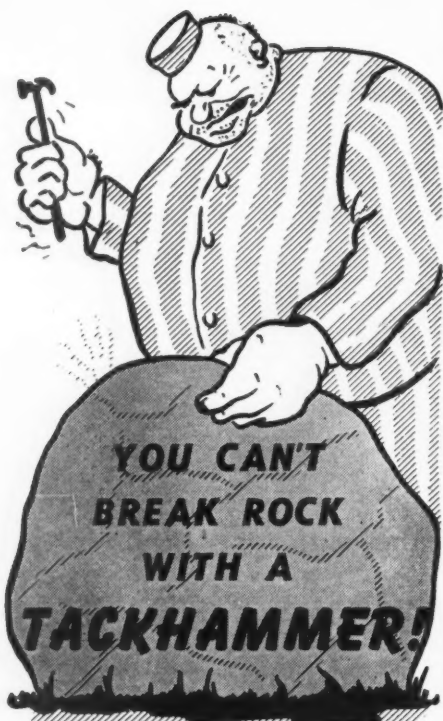
Complete information and specifications on MICHIGAN Mobile SHOVEL-CRANES is available on request. Ask for Bulletin CM-106.



MICHIGAN

POWER SHOVEL COMPANY

BENTON HARBOR MICHIGAN

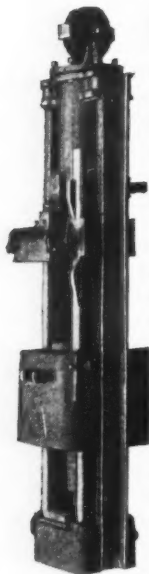


It takes a HEAVY Blow

WARRINGTON-VULCAN

Single-Acting Steam

PILE HAMMERS



ROCK crushing and pile driving have that in common—it takes power to do the job. Power like that of the Warrington-Vulcan Single-Acting Steam Pile Hammer in putting down heavy piles with speed and savings. It drives any kind of pile—wood, steel or concrete. It gets results at a medium steam pressure, with rapid, regular and continuous action, a moderate frequency of low velocity blows from a relatively heavy ram. Simple design and built-in ruggedness save maintenance, mechanical and operating costs. Its economy and ease of operation have been proved time after time on the tough jobs—ever since 1887.

• Full details without obligation

Write today

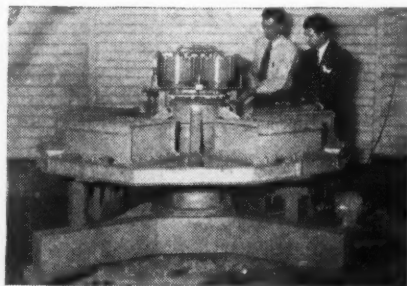
VULCAN IRON WORKS
Since 1852
331 North Bell Avenue



Chicago 12

---Illinois

CONCRETE BLOCK MAKER—A. R. Plambeck, chief tool designer, and Joel T. Henry, president, prepare for test run on new high production concrete block machine designed and manufactured by this company.



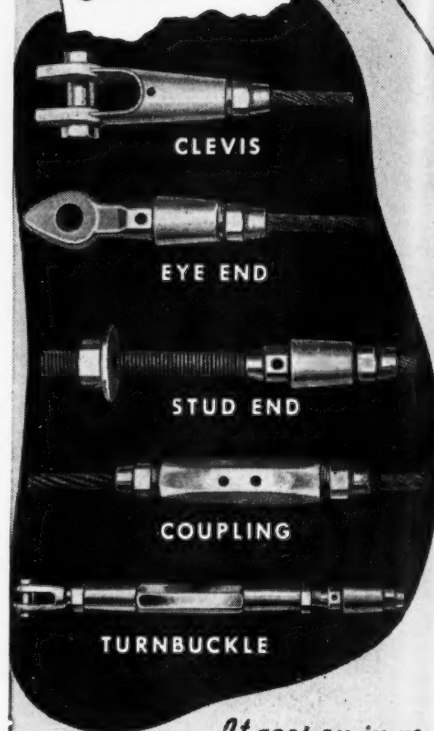
Machine is capable of delivering up to 20 standard size blocks per minute and employs rotating table with all operations being performed simultaneously at four adjacent stations. Two types of models are under construction, one pneumatic and the other hydraulic.—**Henry & Hutchinson, Inc., Decatur, Ga.**

GENERATORS—New series of a. c. generators is made in both 8 and 10 poles, making it especially desirable for direct connection to 720-rpm. and 900-rpm. engines. Alternator can be furnished either with two bearings or single bearing to permit direct carriage of drive and of alternator on engine-driven shaft. Frame is of steel construction. Ball bearings are cartridge type.—**Kato Engineering Co., Mankato, Minn.**

SOIL RESISTIVITY METER—Of importance to all concerned with corrosive action on underground installations is meter that gives accurately and directly electrical resistivity of soil. Readily portable, 19-lb. unit has probe tip that can be inserted to any level and will indicate resistivity within 12 in. of point. It is most useful in determining probable electrolysis and corrosion conditions in advance of installation of pipes and cables so that preventive measures can be taken.—**Associated Research, Inc., 231 Green St., Chicago 7, Ill.**

PIPE PUSHER—Pipe pusher that saves installation costs wherever gas, water or conduit pipe must be put underground has just been announced. Known as Big Joe Pipe Pusher, this device is made in 5 sizes. Outstanding features claimed are simplicity of design and operation, rugged cast steel construction, light and compact but rugged; pushes any length of pipe, total weight only 45 lb.—**Construction Equipment Co., Kalamazoo, Mich.**

*Stronger THAN
THE WIRE ROPE
ITSELF... this
Electroline -FIEGE
CONNECTOR*



It goes on in no time—and hangs on for all time: this simple, hushy device. Simply put the cable end through the sleeve, spread the strands, insert and drive in the plug, apply the socket and set in tight. Through the ingenious inspection hole you can see by the twisted strands that the joint is perfect.

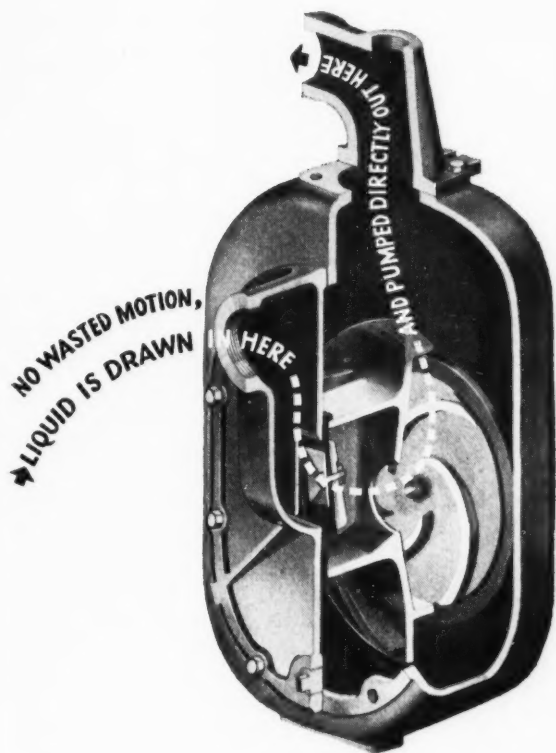
These better connectors dampen vibration, prolong wire rope life. These advantages, plus low cost installation and life-time service, have made them the standby in the shipbuilding and construction industries, and wherever wire rope and cables are used. Available through your mill supply distributor.



MANUFACTURED SOLELY BY
Electroline Company

4121 SOUTH LA SALLE STREET
CHICAGO 9, ILLINOIS

Marlow Pumps Do An Honest Day's Pumping!



Do you choose equipment as you would a business partner?

A Marlow "Water Wizard" can pitch in on the toughest kind of assignment, absorb hours of overtime and like it—and come back for more. Efficient, trouble-free performance on the gruelling jobs that wring sweat from men and machines makes a "Water Wizard" the kind of partner it's profitable to have.

An honest day's work comes naturally to a "Water Wizard". The simplified design of a Marlow Self-Priming Centrifugal enables it to prime and reprime positively and automatically, even on suction lifts as high as 25 feet. A "Water Wizard" has no ports, by-passes or other auxiliary priming devices that reduce efficiency and cause troubles. There is nothing to adjust or manipulate.

A Marlow "Water Wizard" is easy and economical to use and maintain. It is a working partner you can depend on.

Sizes 1½ to 10-inches—3,000 to 240,000 gallons per hour. Interesting Marlow literature will be forwarded promptly on request.

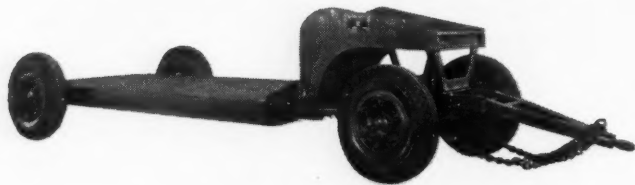
MARLOW PUMPS • RIDGEWOOD, N. J.

MERCER

"The Name that Carries Weight"

MATERIAL HANDLING EQUIPMENT

TRAILER TRUCKS



UNDERSLUNG FRAME

Capacity 5 tons . . . Underslung steel frame. Safety plate, steel deck. Model shown equipped with pneumatic tires. Also available with solid rubber tires. Wheels mounted on Timken type roller bearings. This and all other Mercer Trailer Trucks (All Types—All capacities) designed by engineers whose reputation is founded upon doing things right. Literature available. Inquiries invited.

MERCER ENGINEERING WORKS, INC.

Plant: Clifton, N. J.

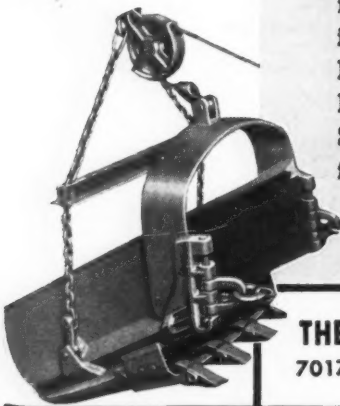
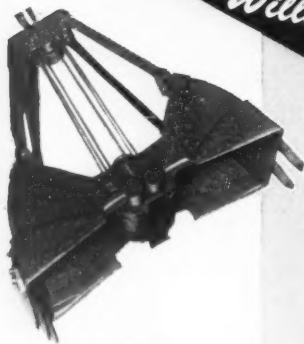
SALES REPRESENTATIVE

MERCER-ROBINSON COMPANY, INC.
30 CHURCH ST., NEW YORK 7, N. Y.

First to feature Welded Steel Construction

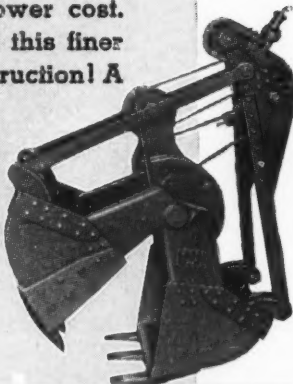
WELLMAN

Williams Type BUCKETS



Bucket users know that welded steel construction means longer service at lower cost. Wellman originated this finer type of bucket construction! A type for every service: Multiple Rope, Power Arm, Dragline, Power Wheel. Special Service: $\frac{3}{8}$ to $16\frac{1}{2}$ yd. capacity.

SEND FOR BULLETIN



THE WELLMAN ENGINEERING COMPANY
7017 CENTRAL AVENUE • CLEVELAND 4, OHIO

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

CONSTRUCTION ACCOUNTING—

Regular counting sheets for cash receipts, cash paid out, job records and payroll records in looseleaf form, with instructions and a special contractors and builders' tax calendar for handling cost keeping and accounting, are now available. Outstanding feature of these sheets is use of building terms and items in the printed headings of the forms themselves as well as in the instruction sheets. Space is provided for continued checking of estimated costs against actual job costs as well as room for important "Job Memoranda" for future estimates.—**Tallman, Robins & Co., Dept. 29, 314 West Superior St., Chicago 10, Ill.**



SHOVEL, CRANE AND DRAGLINE — (20-p. bulletin) Describes Type 802 unit, featuring application of Precision air control. It includes specifications, capacities, working

ranges and illustrations showing details of construction. This model has 2-cu. yd. capacity as shovel, 40 tons as crane, and variable as dragline.—**Lima Locomotive Works, Inc., Shovel & Crane Division, Lima, Ohio**

ELECTRODE SELECTION CHART

—Graphic, four-color, 25x40-in. electrode selection chart has been published to assist operators in the choice of the correct electrode for a particular job. The chart specifies which electrodes to use, shows currents, gives mechanical properties, and also includes an electrode color guide which shows the electrodes in their actual colors.—**Air Reduction Sales Co., 60 East 42nd Street, New York, N. Y.**

WIRE ROPE—(4-p. folder) Describes and illustrates four principal lays of wire rope.—**Union Wire Rope Corp., 21st & Manchester Sts., Kansas City 3, Mo.**

here's the newest—

in *low cost*
aggregate production

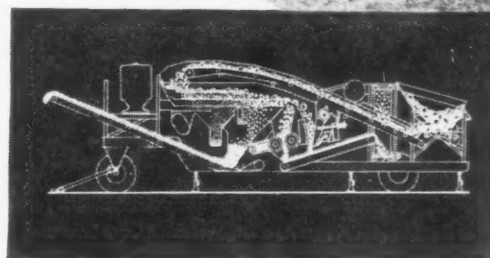


the Cedarapids PITMASTER

IT's also the smallest, complete portable crushing and screening plant that we offer. But there's nothing small about the records of low-cost aggregate production that these new models are making. Operators are reporting production of more than 50 tons per hour of $\frac{1}{2}$ " material with 55% crushing.

Every feature of the new Pitmaster is designed and built to assure low maintenance and low operating costs as well as an exceptionally low first cost. 10" x 16" roller bearing jaw crusher and 16" x 16" roller bearing roll crusher give you plenty of crushing output. Horizontal vibrating screen assures greater capacity, closer grading, higher efficiency and requires less head room. Available with chip screen, hopper and feeder or swivel feed conveyor. Fast, easy set-up and take-down minimize lost time between jobs. No drives to connect. Conveyors swing easily into position.

When buying a crushing plant—buy the best—buy Cedarapids. If your requirements are moderate—buy a Pitmaster.



THE IOWA LINE

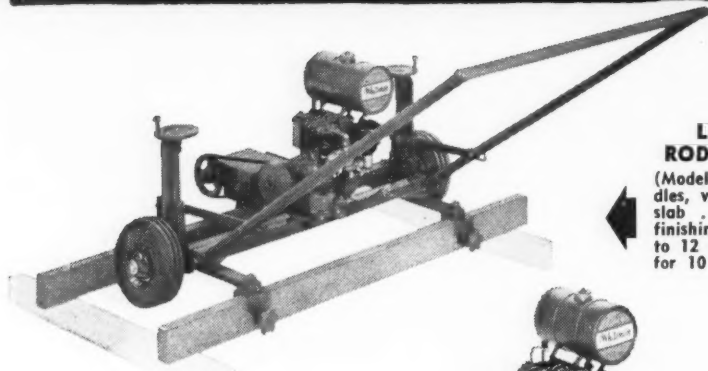
of Material Handling Equipment Includes

- ROCK AND GRAVEL CRUSHERS
- BELT CONVEYORS • STEEL BINS
- BUCKET ELEVATORS
- VIBRATOR AND REVOLVING SCREENS
- STRAIGHT LINE ROCK AND GRAVEL PLANTS
- FEEDERS • TRAPS
- PORTABLE POWER CONVEYORS
- PORTABLE STONE PLANTS
- PORTABLE GRAVEL PLANTS
- REDUCTION CRUSHERS
- BATCH TYPE ASPHALT PLANTS
- TRAVELING (ROAD MIX) PLANTS
- DRAG SCRAPER TANKS
- WASHING PLANTS
- TRACTOR-CRUSHER PLANTS
- STEEL TRUCKS AND TRAILERS
- KUBIT IMPACT BREAKERS

Iowa Manufacturing Company
Cedar Rapids, Iowa



Machine Economy and Perfection for SMALL CONCRETE JOBS



LIGHTWEIGHT FLOATING-FINISHING MACHINE
(Model "J")

For level finishing . . . for either traction or smooth surfaces. Only 105 lbs., 35" diameter. Also in Model "B", 46" diameter.

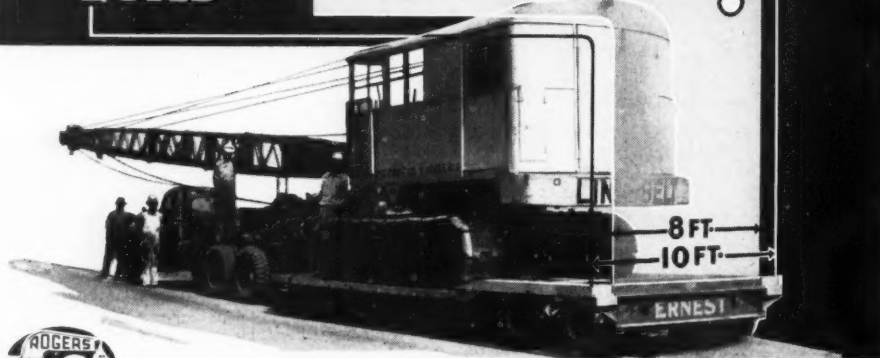
LIGHTWEIGHT RODDING MACHINE
(Model "RS") screeds, puddles, vibrates and levels the slab . . . prepares it for finishing. For slab widths 3 to 12 ft. Also in Model 44 for 10 to 20 ft. widths.



Write for folder and name of nearest distributor.

Whiteman CONCRETE EQUIPMENT
WHITEMAN MFG. CO.
3249 Casitas Ave., Los Angeles 26, California

A 10 FT. LOAD ON AN 8 FT. TRAILER?



With trailer width limited to 8 feet in several states how do movers haul the bulky loads in excess of this width?

Many of them have solved the problem with Rogers Trailers equipped with swinging side brackets which quickly widen the trailer to 10 feet. Authorities permit these necessary moves knowing that the return trip will be made with the trailer again narrowed to legal width. Solutions to other unusual problems are to be found in Rogers Girder Type and Rocking Beam Trailers.

Write for the Rogers Catalog.

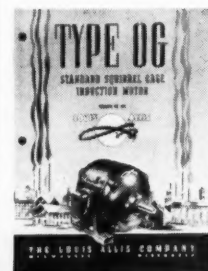
ROGERS BROTHERS CORPORATION

220 Orchard Street

Albion, Penna.

ROGERS TRAILERS
EXPERIENCE builds 'em • PERFORMANCE sells 'em

CONSTRUCTION SAFETY—"Surface Construction without Accident" is title of 84-p. booklet by H. Edgar Beaven which emphasizes elimination of causes of accidents at surface on such jobs as earth moving, roadbuilding and small structures. Planned as reference for contractor, superintendent and foreman, chapters include suggestions on rock excavations, first aid and how to protect public on road jobs and detours. Considerable portion is devoted to methods of keeping payroll and cost records to assure minimum rate classifications and ease of auditing payroll on surface construction jobs.—**Engineering Dept., American Mutual Liability Insurance Co., Boston 16, Mass.**



INDUCTION MOTOR—(12-p. bulletin) Covers Type OG (protected type) standard squirrel cage induction motor. It includes construction, features, and typical applications.—**Louis Allis Co., Milwaukee 7, Wis.**

GAS WELDING CODE—Standard Code for Arc and Gas Welding, 1946 edition, replaces 1941 tentative edition. It embodies revisions based on recent applications of welding to structural fabrication and recent research. Section on design provides for increased allowable weld unit stresses equal to those allowed for steel being welded. Other sections on filler metal, workmanship, inspection and qualification of welding operators and procedures also have been provided. It has been prepared so as to be suitable in language, form and coverage for adoption as administrative law.—**American Welding Society, 33 W. 39th St., New York 18, N. Y.**

WELDING ELECTRODES—(64-p. catalog) Includes complete descriptions, color identifications, specifications conformed to, physical properties, welding procedures, recommended ranges and sizes available in the entire line of Hollup electrodes—mild steel, alloy steel, stainless, hard facing, cast iron, etc. There are tables on the weldability of metals, appearance inspection of welds, electrode consumption estimating chart and definitions of welding terms.—**Hollup Corp., 4700 W. 19th St., Chicago 50, Ill.**

DIESEL TRACTOR—(24-p. catalog) Introduces newly improved HD-10 diesel tractor. Among features in this booklet are those about grease-packing and "positive seals," transmission construction, two-cycle diesel power, new longer track design. Entire page is devoted to standard equipment and auxiliary attachments of HD-10. Specification sheet offers detailed information about tractor's 86-drawbar horsepower, its six speeds forward and two reverse, engine dimensions and fuel capacities.—**Allis-Chalmers Mfg. Co., Tractor Division, Milwaukee 1, Wis.**



COLOR HARMONY—(Illustrated, multi-color brochure) Presents "eye comfort" plan of harmonious color series, designed to improve visibility, relieve eyestrain and promote health, safety and morale in industrial plants and institutions. Samples are given of four series of colors—designated as day light, warm light, cool light, and soft light—for use on walls and ceilings and as trim, dado and base.—**Truscon Laboratories, Inc., Detroit 11, Mich.**

EXPANSION JOINTS—(12-p. catalog) Lists complete engineering data, dimensional tables and specifications for standard packless expansion joints, anchor joints and low-pressure, large-diameter expansion joints. It contains information on other recent developments, such as offset, Turbo and jacket joints, and includes material on high-temperature exhaust bellows and heavy-duty clinch-lock bellows.—**MagniLastic Division, Cook Electric Co., 2700 Southport Ave., Chicago 14, Ill.**

ELECTRIC POWER—Describes generating plants, independent generators, high-frequency generators, rotary converters and battery chargers.—**Kato Engineering Co., Mankato, Minn.**

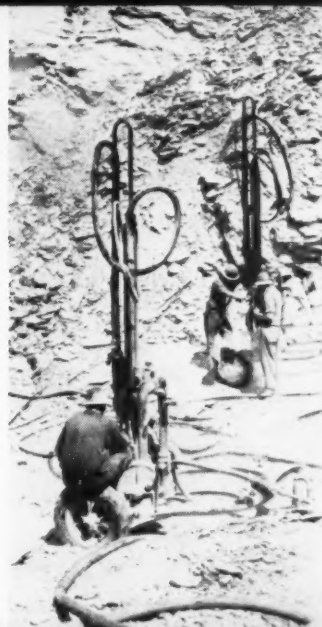
HOUSE-BUILDING MACHINE—(16-p., illustrated brochure) Describes Tournalayer and concrete house that it constructs. It furnishes specifications and lists equipment rental costs with estimated production.—**R. G. LeTourneau, Inc., Peoria, Ill.**

"SUBWAY"



*To Make Rock Drills
Give Their **BEST!***

There's a steady pulse of power, always, through this strongest, toughest air hose . . . a favorite among construction men since the earliest days of pneumatic tools. Made with a long-wearing, oil-resistant tube; highest quality duck carcass; and a smooth, brawny red cover that fights rough handling and severe abrasive wear to the limit. Sizes 1/2" to 1 1/4".

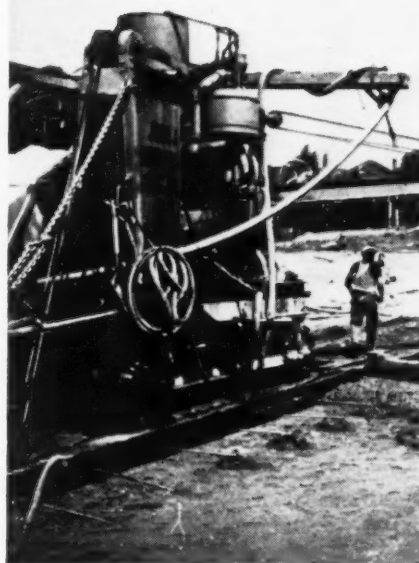


"ROADBUILDERS"



*To Insure Steady
Yardage From Your
Pavers, Mixers*

Built to prevent failure in the all-important water supply to heavy-duty roadbuilding equipment. The tough red cover withstands a terrific amount of dragging over rough surfaces; the hard-woven duck carcass carries high pressures with a wide margin of safety; and the long-life tube holds its diameter to permit a full, fast flow. Sizes 1" to 2", inclusive, maximum lengths of 50 feet.



Contact Our Nearest Branch or Main Office for Details



GOODALL

RUBBER COMPANY • INCORPORATED

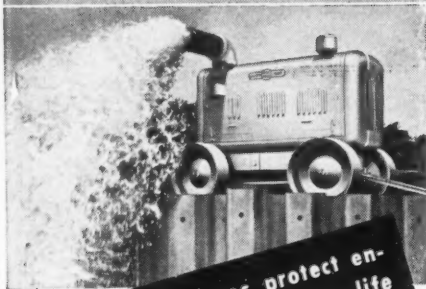
THE GOODALL-WHITEHEAD COMPANIES

Philadelphia • Trenton • New York • Chicago • Pittsburgh • Boston
Los Angeles • San Francisco • Seattle • Salt Lake City • Houston

Factory—Trenton, N. J. Established 1870

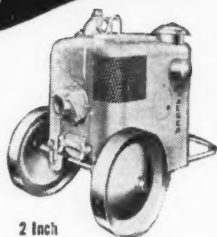
WE ARE
PARTICIPANTS IN THE
OWNERSHIP AND OPERATION
OF
NATIONAL SYNTHETIC RUBBER
CORPORATION

JAEGER BUILDS BETTER PUMPS INSIDE and OUT



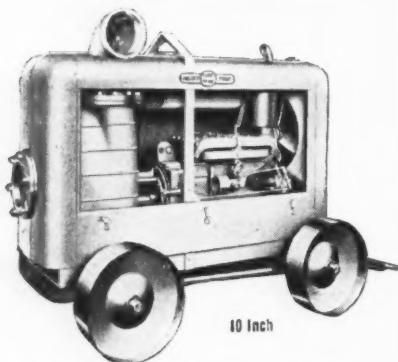
Modern enclosures protect engine efficiency...add longer life

Experienced contractors buy far more Jaeger "Sure Primes" than any other make of pump. They know that all "Sure Prime" pumps are better engineered, conservatively rated, powered with high grade engines and enclosed in modern housings that keep those engines dry, clean, quick-starting and smooth running for extra thousands of hours of low cost service.



2 Inch

Protected Yet Accessible



10 Inch

Instant opening side panels admit to all operating controls. Enclosures are also designed to lift off or swing open for complete access when desired. One of many exclusive Jaeger advantages.



Capacities 3000 to 240,000 g.p.h.

Only Jaeger Offers All These Features:

Inherent priming action plus "jet" priming—fastest and doubly sure . . . "Lubri-Seal," accessible for inspection . . . Self-cleaning shells . . . Replaceable liners or seal rings . . . Pumps individually tested and certified for performance.

THE JAEGER MACHINE CO.

Main Office, Factory, Columbus, Ohio
REGIONAL OFFICES:
8 E. 48th St. CHICAGO 7, ILL.
NEW YORK 17, N. Y. 226 N. La Salle St.
235-38 Martin Bldg.
BIRMINGHAM 1, ALA.

HYDRAULIC BRAKE—(22-p. service manual) Includes general service instructions and maintenance suggestions for the new Wagner Lockheed self-centering self-adjusting hydraulic brake. Drawings and sketches are used to illustrate operating principle of self-centering feature; self-adjusting device which automatically compensates for lining wear; and complete servicing procedure, including shoe removal, relining, inspection of self-adjusting device, brake assembly and initial adjustment, reassembly of self-adjusting device, adjusting brake pedal, master cylinder, and parking brake, bleeding hydraulic system and servicing master cylinder and wheel cylinders.—Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 14, Mo.

WATERPROOF CONNECTOR—(4-p. folder) Describes Type W connectors, which are designed specifically for submarine geophysical exploration and are also adaptable for use in swamps, lakes, rivers, docks, with underground cable, or in any outdoor applications where moisture conditions require a thoroughly sealed fitting.—Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.

Shunk Snow and Ice Removal BLADES

Proved record of superior performance. Made of specially developed steel to withstand severe service conditions.

FOR ALL TYPES AND MODELS OF SNOW PLOWS
Various widths, lengths, thicknesses—flat or curved—standard or special—punched ready to fit your machine.

SHUNK SAW-TOOTH ICE BLADE

Amazingly effective. Thoroughly breaks up and removes heavy, slippery ice and snow formations. Replaces all types of snow plow blades or maintenance units. Write for Bulletin and name of nearest Distributor.



Shunk

MANUFACTURING COMPANY

ESTABLISHED 1854
BUCYRUS, OHIO

Now available in
an up-to-date
Second Edition



The reference aids you'll
need for the big jobs ahead!

With the construction jobs that lie ahead for every engineer, it is only up to you to assure yourself of superior workmanship—ensure your work of the finest structural qualities—by providing yourself with this up-to-the-minute revision of the famous Hool and Kinne Library—the books which for years have been providing structural engineers with the facts they need on every problem concerned with the design and construction of civil engineering structures.

6 volumes

3763 pages

2719 illustrations

63 contributors

make this the most complete compilation of structural engineering data ever published.

HOOL AND KINNE'S

STRUCTURAL ENGINEERS'

Library

Revised by R. R. ZIPPRODT.

And prepared by a staff of sixty-three well-known engineers, each a specialist in his field.

Each one of these six volumes is a complete reference in itself on some aspect of structural engineering. The library

COVERS the how and why of foundation and substructure design and construction, the general theory of structural members, the detailed design of such members and the design of their connection with other members.

EXPLAINS the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portal bracing.

GIVES details of design and construction of steel, timber and concrete structures of all types.

We invite you to inspect these books for yourself, because we know that that is the one way you can realize their true value to you, and to the jobs that you do. You want to back up your own knowledge with sure, easy-to-get facts, and you want to make your workmanship worthy of your best time and effort. Therefore, the best investment you can make is to add to your own experience the tested working aids given in this dependable reference library.

Send for all six books, and allow them to go to work for you on your toughest problems.

SEND THE COUPON FOR FREE
10-day TRIAL EXAMINATION

McGraw-Hill Book Co., 330 W. 42 St., N. Y. 18

You may send me Hool and Kinne's Structural Engineers' Library for my inspection. If the books prove satisfactory, I will send \$4.75 in 10 days and \$5.00 per month until I have paid the price of the books, \$29.75. If the books are not what I want, I agree to return them postpaid within 10 days of receipt.

Name

Address

City and State

Company

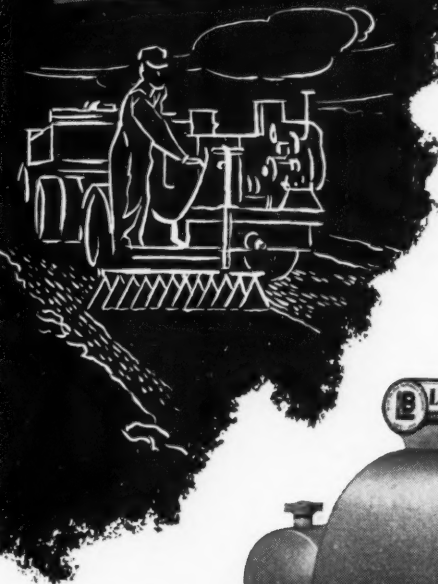
Position CM 10-46

(For Canadian price, write: Embassy Book Co., 12 Richmond St. E., Toronto, 1)

THIS No. 101 UNIT IS PACKED FULL OF UTILITY

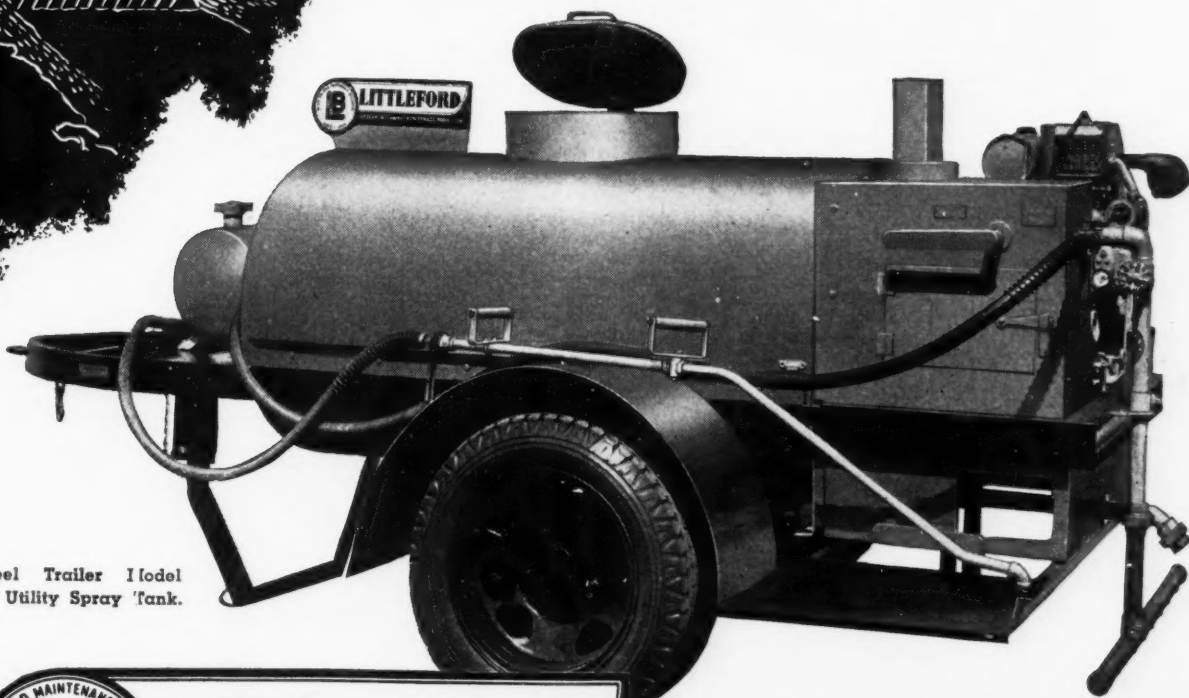


Truck mounted No. 101 using Hand Spray Attachment.



When those Streets, Roads or Airport Runways need repair, the Littleford Model No. 101 Utility Spray Tank is just the unit for the job. It's a combination of three units in one—has Spray Bar for small application work, Hand Spray for patch work and a Pouring Pot Outlet for crack filling work.

No. 101 will handle Asphalt, Tar, Cut-back, Road Oils and Emulsions. For real Utility be sure to use a Littleford No. 101 Utility Spray Tank.



Two-wheel Trailer Model No. 101 Utility Spray Tank.



LITTLEFORD

LITTLEFORD BROS., Inc.

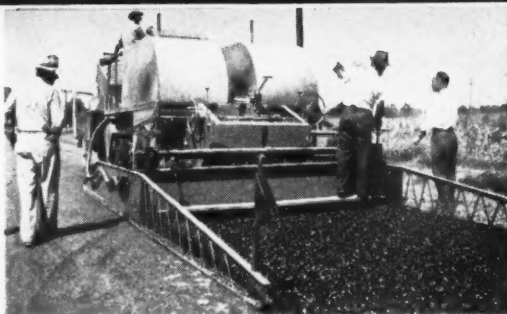
465 E. PEARL ST., CINCINNATI 2, OHIO

AFTER TWENTY YEARS...

A REAL IMPROVED METHOD FOR
DOING MIXED-IN-PLACE WORK

MOTO-PAVER DOES THE
Complete MIXING
AND PAVING JOB!

H. & B. builds portable and
stationary asphalt plants of
all types, sizes and capacities.



Contractors who have seen the MOTO-PAVER in action pronounce it the first real improvement in 20 years for doing mixed-in-place work. The MOTO-PAVER mixes and paves as it goes, spreading and laying any type of mixed-in-place bituminous material to any width, thickness, and crown condition. Especially

adapted for resurfacing work on county roads and city streets, the MOTO-PAVER is also highly efficient on new construction. Bulletin MP-46 will be sent on request.

HETHERINGTON & BERNER INC.
735 Kentucky Ave., Indianapolis 7, Ind.

H&B Moto-Paver
THE COMPLETE TRAVELING MIXER AND PAVER

The "33,000 for 1" Pump



BARNES Automatic Pumps deliver "33,000 for 1" performance. For each gallon of gasoline consumed, Barnes Pumps deliver 33,000 gallons of water — the equivalent of 4 1/4 tank cars. That's real economy. And economy coupled with Barnes extra dependability, portability, and ruggedness means cheaper and faster completion of the job.

Barnes "33,000 for 1" performance is made possible by precision engineering and close tolerance machining to allow within the pump direct flow from suction to discharge. The suction inlet is in direct line with the impeller. There are no "water detours." This eliminates needless friction and allows the power unit to operate without unnecessary labor. Fuel consumption is low and performance is high, for in Barnes Automatic Centrifugal Pumps water takes the natural, direct flow route.

**LET YOUR BARNES DEALER HELP
SOLVE YOUR PUMPING PROBLEMS**

BARNES MANUFACTURING CO.
Quality Pump Manufacturers for 50 Years MANSFIELD, OHIO

EQUIPMENT MEN and Their Companies

Lidgerwood Manufacturing Co., producer of hoisting, conveying and marine auxiliary machinery, is reorganizing its manufacturing facilities, concentrating its heavy manufacturing and its medium and light lines in its other plants, principally those located at Superior, Wisconsin, and Beacon, New York. The program will result in increased efficiency and economy of operation and will afford more suitably located shipping points for the convenience of its customers. Facilities at the Superior and Beacon plants will be enlarged. In addition to hoisting and conveying machinery, the company's products include mine equipment, heavy construction machinery, electro-hydraulic steering gears, windlasses and marine deck auxiliaries. The company established executive offices at 7 Dey St., New York 7, N. Y., on Oct. 1.



Edward M. Howard has been appointed district engineer of the Asphalt Institute for the territory comprising the six New England states. At the Boston office of the Institute, Mr. Howard will be equipped to extend its engineering,

research and promotional facilities to highway engineers and contractors.

Edward B. Heyden has been named to head the construction division of the Grave Tank & Mfg. Co., Inc. Active in construction work since 1920, Mr. Heyden has been associated with The Lummus Co. for the past 14 years.

A special issue of "The Eutectic Welder" contains some unusual photographs showing applications of the company's products to wartime metal joining problems. Of particular interest are three photo-micrographs taken at 500 diameters which vividly show the perfect bonds possible through the use of the company's products. It is published by Eutectic Welding Alloys Corp., New York, N. Y.

Buckeye✓ TO LOWER TRENCHING COSTS

Every Buckeye Trencher in the broad line shouts "sound engineering" at you . . . plus values based on over 50 years of experience are part and parcel of these rugged and ready trenchers. For example, the popular Model 120.

Ideal size and capacity for a maximum range of work . . . quickly and economically digs trench for service pipe, small sewerage pipe, water and gas mains, electric and communication cable conduits, roadside drainage, interbuilding steam ducts and foundation and footing trench for large buildings. Advanced design makes it tomorrow's way of trenching — but it can be yours today. Send for Bulletin.

"KEYHOLE" SPECIFICATIONS MODEL 120

Digging Width: 18" to 30".
Digging Depth: up to 11½'.
Boom: Shiftable to left or right of center. Ample power to handle dual boom, as shown below. Boom quickly raised or lowered; positive crowd.
Shiftable arcuate conveyor.
20 cutting speeds, forward; 4 reverse.
Bucket Chain: drop forged links with splined bushings. Manganese steel bucket teeth.
Only 6'3" wide, 29'6" long (max.), 11'10" high (max.).



**BUCKEYE TRACTION
DITCHER CO.**
FINDLAY, OHIO

"TOMORROW'S WAY IS YOURS TODAY"

Buckeye✓

CONVERTIBLE SHOVELS—BULLDOZERS—ROAD WIDENERS—TRENCHERS—MATERIAL SPREADERS—R-B FINEGRADERS

NEW-FREE!

OAKITE MANUAL



Tells how to save Money on Servicing Construction Equipment

If you are interested in expediting the servicing of such road and street building equipment as diggers, crushers, compressors, graders, drilling machines, excavators, scrapers, loaders, mixers, shovels, plows, etc. this new 36-page Oakite Automotive Service Manual will prove especially helpful. The information it contains is based on current practices followed in thousands of successful service shops.

For example, it describes streamlined procedures for saving money on such maintenance jobs as:

- Steam-cleaning motors, chassis
- Reconditioning clogged radiators
- Cleaning cooling systems
- Degreasing parts before repair
- Keeping floors, work pits clean

Write for FREE copy of this fact-filled manual TODAY!

OAKITE PRODUCTS, INC.

248 Thames Street, New York 6, N. Y.

Technical Service Representatives located in All Principal Cities of the United States and Canada

OAKITE Specialized CLEANING

Marquette Cement Manufacturing Co. has announced its first major postwar plant reconstruction project in the modernization of the storage and shipping departments at its Hawkeye plant in Des Moines, Iowa, where new storage silos, packing and bulk loading plants and a sack handling plant will be constructed.



Arthur C. Wilby has been elected vice-president of United States Steel Corp. of Delaware, with headquarters in Chicago, Ill. Mr. Wilby began his association with the company in 1909 and has been in charge of public relations for United States Steel subsidiaries in the Chicago district since 1938.

Capt. Rodney F. Coltart, recently released from the U. S. Army Sanitary Corps., has returned to Link-Belt Co. as engineer for the Sanitary Engineering Division in eastern sales territory.

Digs 600 Holes a Day

For Foundation Footings . . . Highway and Industrial Fencing . . . Rural Telephone and Light Poles . . . Airports . . . Cemeteries . . . Holes for Dynamiting, etc.



"SPEEDDIGGER"

Quickly mounts on all row crop tractors; also available for all crawler-type tractors. Drills at any angle, up to 54° deep. Standard auger sizes from 4" to 12".

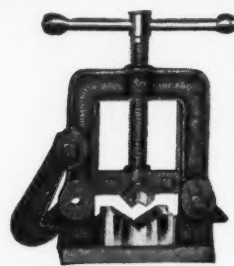
Operator stands on platform, behind protective handrail . . . out of dirt . . . away from moving parts. Built extra strong for toughest digging operations. Drills through hard dirt, frosted ground, roots and gravelly soils. Thousands in use by state highway departments, utility companies, U. S. Govt. engineers, etc. Thoroughly proved. Guaranteed.

WRITE for details and prices . . . available now . . .

R. J. PIPER MANUFACTURING CO.
PRINCETON, ILLINOIS
New York Office: 100 E. 42nd St.



BETTER PIPE TOOLS



"ARMSTRONG BROS." Hinged Pipe Vises are built for lifetime service with unbreakable drop forged steel hooks. Other design improvements include: oval handle ends (will not pinch hands), replaceable tool steel jaws with milled teeth, and on sizes 70 and 71, a solid 1-piece jaw that prevents kinking of small pipe. There are always extra quality features in an "ARMSTRONG BROS." Pipe Tool.



"ARMSTRONG BROS." Post Pipe Vises are of convenient open side type and easily mounted on bench truck, or with accompanying Chain Attachment, to any post, telephone pole or tree. They have the replaceable tool-steel jaws and the other ARMSTRONG quality design features.



"ARMSTRONG BROS." Chain Pipe Vises combine compactness, convenience and portability with large capacity range. They can go to the job in a tool bag; can be easily mounted on any post or bench. Patented 1-piece, solid center jaw prevents kinking of small or thin walled pipe or conduit. Jaws, base and handle are drop forged, the chain is proof tested.

ARMSTRONG BROS. TOOL CO.

"The Tool Holder People"

334 N. Francisco Ave.

Chicago 12, Illinois

Eastern Whse. and Sales: 199 Lafayette St., New York 12, N. Y.
Pacific Coast Whse. and Sales Office: 1275 Mission St., San Francisco 3, Calif.



SPEED UP CONSTRUCTION WITH HEAT!



The Herman Nelson Self-Powered Heater cuts winter "waiting-time"

can be used for

SPACE HEATING of temporary buildings, storage sheds, repair shops, buildings under construction.

PREHEATING engines and all kinds of mechanical equipment.

SPOT HEATING of materials, workmen, machinery, storage tanks, tools.

THAWING frozen areas and machinery, wheels, gears, transmissions, caterpillars, etc.

VENTILATING and heating of manholes, tunnels, box cars, ship holds, confined areas of all kinds.

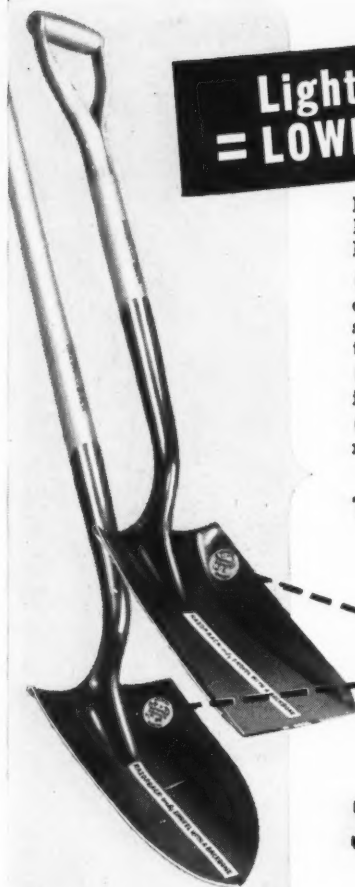
DRYING and curing of materials, plaster, paint, mortar, concrete, etc.

Now, for the first time, you can have an independent source of QUICK HEAT—LOTS OF IT, to carry you through many a winter emergency. No more cold weather delays. No more wasting of time. This amazing new heater turns out volumes of fresh, heated air within minutes—enough to heat three ordinary five room houses! Burns gasoline by an entirely different and safe method. No soot. No smoke. No open fires. Simply designed and easily operated. Requires a minimum of attention. The Herman Nelson Self-Powered Heater is a completely self-contained, portable unit—utterly new in principle. Can be easily moved from place to place on the job—by one man.



THE HERMAN NELSON CORPORATION
for 40 years manufacturers of quality heating and ventilating products
MOLINE, ILLINOIS

Lighter Load + Longer Life = LOWER SHOVELING COSTS



It's time to check the shovels you've been buying against the advantages of the modern RAZOR-BACK:

- (1) The strongest light shovel ever made — of 13 ga. thickness up the middle where a shovel gets all its wear and strain, tapering to 17 ga. at the sides and with 11" long socket.
- (2) Tubular shank with deep hang and perfect working balance.
- (3) "Surface Peened" to stand more punishment, do more work.

Send for Catalog, Prices and Distributor's Name

THE UNION FORK & HOE CO

652 Hocking St., Columbus 15, Ohio

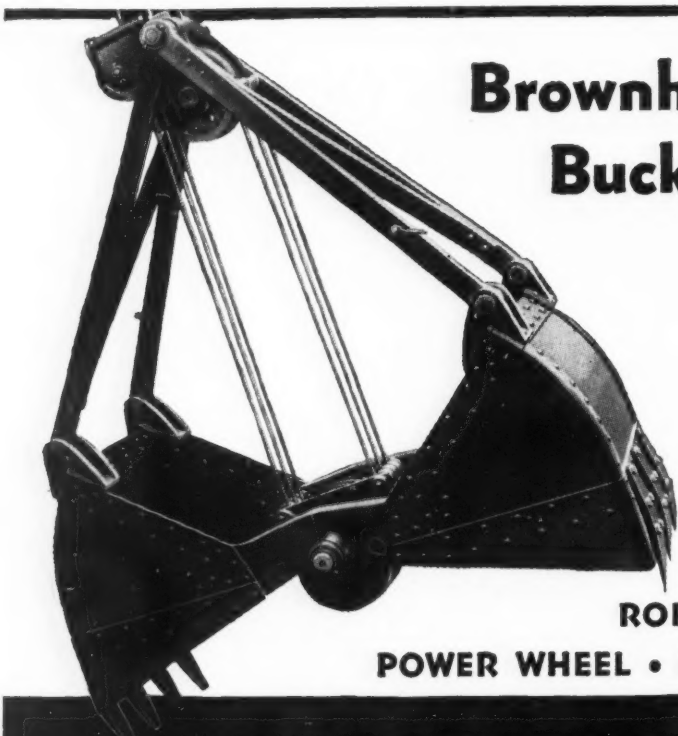


"SURFACE PEENED"—Every shovel "cold-worked" following heat treatment,—tests $2\frac{1}{2}$ to 5 times tougher than fine shovels merely heat treated.

RAZOR-BACK

THE ONLY SHOVEL WITH A BACKBONE

ALSO STONE, BALLAST INDUSTRIAL FORKS — ASPHALT AND ROAD RAKES



Brownhoist Buckets

ROPE REEVE •
POWER WHEEL • LINK TYPE

Handling ore, gravel, coal or dirt Brownhoist Buckets do a better job because: 1) Larger sheaves reduce rope wear, 2) Heavy carbon-steel digging lips take deep clean bites, 3) Extra-sturdy construction insures long-life. Write to Industrial Brownhoist Corporation, Bay City, Michigan. Offices in New York, Philadelphia, Pittsburgh, Cleveland and Chicago.

John Lester Perry, who rose from steel plant clerk to the presidency of Carnegie-Illinois Steel Corp., retired tomorrow as head of this U. S. Steel subsidiary and becomes assistant to the president of United States Steel Corp., of Delaware, Benjamin F. Fairless. Mr. Perry, a native of Worcester, Mass., began his business career as a cost clerk in the Worcester operations of American Steel and Wire Co., on his graduation from high school in 1899; he was transferred to the operating end of the industry as a foreman of the cold rolling department in 1913. From then on he rose through the positions of assistant superintendent and superintendent becoming manager of the company's Worcester district in 1928. He was appointed vice-president of the company in charge of operations in 1933, with headquarters in Cleveland, Ohio. Two years later Mr. Perry was elevated to the presidency of Tennessee Coal, Iron and Railroad Co., at Birmingham, Ala., another U. S. Steel subsidiary. On Jan. 1, 1938, he became president of Carnegie-Illinois Steel Corp., with headquarters in Pittsburgh.



Ed. J. Towey, of Minneapolis, Minn., has been named as sales manager, Industrial Division, Adel Precision Products Corp., Burbank, Calif. Mr. Towey was formerly executive vice-president in charge of sales, engineering,

advertising and development of new products for the Diamond Iron Works of Minneapolis.

H. H. Landis has been appointed eastern division manager of the Joyce-Cridland Co. He will work out of the Dayton office.

Appointment of K. P. Swanson, 204 Chapel St., Abington, Mass., to represent Progressive Welder Co., in eastern Connecticut, eastern Massachusetts, Rhode Island, Maine, Vermont and New Hampshire, has been announced.

The Florida-Georgia Tractor Co. of Savannah and Waycross, Ga., has been appointed full line distributors of Davey compressors, according to an announcement made today by Paul H. Davey, president.



A. A. Kalinske has been named chief hydraulic engineer of Infilco, Inc. He has a background of highly specialized experience covering 9 years of university teaching, research and

outside consultation.

Le Roi Co., Cleveland Division, announces removal of general offices & engineering department to Main Plant, 12500 Berea Road, Cleveland 11, Ohio.

A new oxygen cylinder filling station and Prest-O-Lite acetylene-producing plant is being constructed for The Linde Air Products Company at Boise, Idaho. The new facilities are expected to be completed by the latter part of 1946.

The **Rockwell Manufacturing Co.**, Pittsburgh, Pa., has established a new hydraulics division, to specialize in the development of hydraulic equipment. **W. H. Marsh** will be general manager of the division. He joined the Pittsburgh Equitable Meter Division of Rockwell Manufacturing Co. in 1934 after previous experience with the Pittsburgh Coal Co., Gulf Refining Co., John F. Casey and The Pennsylvania Pump Co.

MAINE TURNPIKE

(Continued from page 81)

thick, the average is 3 ft., while over soft and wet foundations it is up to 4 ft. thick or even more.

Flexible Contracts

Grading has been set up under a very flexible contract procedure designed to keep work going at top speed, to take care of necessary revisions and adjustments in the field to suit changing conditions and to give the engineers full control over the selection and placement of the permeable material without hurting the contractors financially. Borrowpits are se-

(Continued on page 166)

Famous Stops

"BIG THREE" STOPPER

In 1921, little Centre College of Kentucky startled the sports world by stopping Harvard, 6 to 0. This was the first challenge to the football supremacy of "Big Three."



STOPPED FROM THE AIR

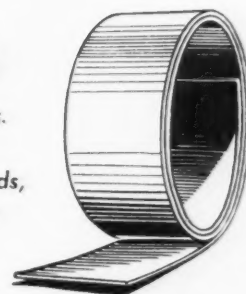
In May, 1942, at the Battle of the Coral Sea, the U. S. Navy met and stopped the Jap fleet. By winning this battle, the first major victory for the U. S., a chain of victories was started that was never stopped.



FAMOUS FOR SURE STOPS

at all times are Johns-Manville Industrial Friction Materials. Available in a wide variety of flexible and rigid styles, these Friction Materials "Go to work" . . . on swings, crowds, hoists and brakes . . . to give you the maximum cycles per minute on your equipment.

Johns-Manville, Box 290, New York 16, New York



Johns-Manville
INDUSTRIAL FRICTION MATERIALS



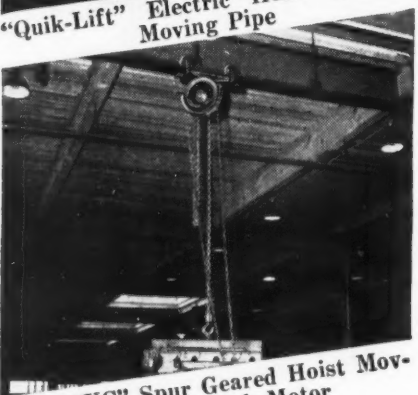
Wherever COFFING HOISTS are installed there is a noticeable saving in manhours and manpower. New uses are being found daily in all kinds of plants and industry—whether it's production, construction or maintenance.



"Safety-Pull" Hoist Pulling Concrete Forms



"Quik-Lift" Electric Hoist speedily Moving Pipe



Model "YC" Spur Geared Hoist Moving Large Truck Motor

There is a COFFING HOIST to meet your requirements. Contact your supply house for detailed information or write for our Bulletin Form 4.

COFFING HOIST COMPANY

Danville, Illinois, U. S. A.

(Continued from page 165)

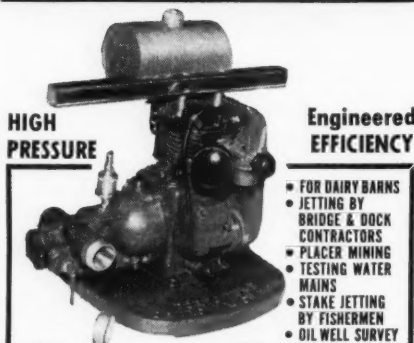
lected by the contractors, with engineering approval, but the Authority pays the landowner royalty for material removed, ranging from 2 to 15c per cu. yd. All contract items are on a unit price basis, with overhaul paid for in 1/2-mi. increments. Thus, the engineers can, when a borrowpit of the relatively scarce permeable material is opened up, designate that the material be hauled to specific locations as far as 3 or 4 mi. away.

Grades are frequently changed to meet conditions encountered in the field. Rock excavation is kept to a minimum, fills may be lowered in areas of good material scarcity, and are raised where continuing investigations reveal wet or soggy ground. Drainage is carefully watched, culverts are numerous, and interceptor sidedrains are installed along wet sidehill cuts.

The accompanying illustrations show various features of grading operations. Both contractors are using combinations of shovel excavation, with LeTourneau and Euclid wagon haul, and scraper work. Additional equipment is arriving on the job almost daily,

(Continued on page 168)

HIGH PRESSURE UTILITY PUMP



HIGH PRESSURE

Engineered EFFICIENCY

PORTO-PUMP

Small towns and resorts, financially unable to own and maintain high priced fire pumper, can now afford fire protection. Porto-Pump can be mounted in rear of light truck, motor scooter or trailer.

Independently powered, self sufficient and engineered for continuous use at consistent high efficiency, the rubber impellers deliver over 40 U. S. gallons per minute at 120 lb. pressure by actual flow-meter test.

Where hydrants are not available, use water from ditches, lake or cistern. Pressure and volume losses due to abrasive action of dirty water are avoided by Porto-Pump's rubber impellers.

SOME DISTRIBUTOR TERRITORIES AVAILABLE

PORTO-PUMP, INCORPORATED

227 IRON STREET, DETROIT 7, MICH.

Watch out for these common legal mis-steps of contracting

Over 100 "cases" from the busy legal life of "Tractor Conn" give a quick clear view of typical points of conflict in contracting—and show

how the courts regard them

Here's a practical legal guide for the busy contractor. It presents a series of short, interesting case discussions pointing up problems that may arise in connection with your work, and showing you how to safeguard your interests and avoid trouble. The facts of each case are clearly stated, then the actual court decision which governs such a situation is simply presented, together with the reference number of the case.

Just published!

THE CONTRACTOR'S LEGAL PROBLEMS

By NORRIS L. HAYWARD

175 pages, 5 1/2 x 8, 19 illustrations, \$2.50

This book illustrates exactly where the contractor stands on many touchy legal questions that may come up in his work. Sound, plain-talking articles cover numerous typical situations, explaining clearly the principals involved, and presenting the decision of the court. Each article is based on an actual ruling of an American court, and gives a brief quotation with the gist of the decision.

The book touches on a wide variety of the legal aspects of contracting problems of contracts, insurance, liens, building permits, waivers, sub-contracting, etc. It gives all the necessary background to each case, then comes quickly to the point, showing you in simple, easy-to-read language, the actual points you need to know to avoid costly legal mis-steps. The book is based on a highly popular series that appeared in Construction Methods.

Over 100 concise articles cover legal problems of:

contracts
bids
checks
insurance
strikes
shipments
surety bonds
defaults
leases

liens
deliveries
options
mortgages
drafts
waivers
notes
delays
etc., etc.

Use this book to look up legal questions such as:

- when an oral contract to purchase may be good
- when delay may amount to acceptance of an order
- when a contract to construct a building cannot form the basis of a civil action
- when the holder of an option to buy property may insure his interests
- when the contractor is let out of finishing a building on time
- when a contractor can make new shipping arrangements in an f.a.s. shipment
- when the owner must reimburse the contractor for additional wages paid his men

See it 10 days FREE

Mail Coupon

McGraw-Hill Book Co., 330 W. 42 St., NYC 18
Send me Hayward's The Contractor's Legal Problems for 10 days' examination on approval. In 10 days I will send \$2.50, plus few cents postage, or return book postpaid. (Postage paid on cash orders.)
Name _____
Address _____
City and State _____
Company _____
Position _____ CM 10-46
(For Canadian price, write Embassy Book Co., 12 Richmond St. E., Toronto 1)

fast-low cost...

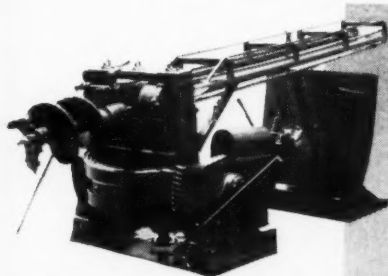
power pole work...

with
**BUDA
EARTH
DRILLS**

Here are some of the features that make BUDA Earth Drills the increasing choice for fast-low cost power pole work:

- **MAXIMUM MOBILITY** . . . easily transported as a complete truck-mounted unit.
- **QUICK SET-UP AND DRILLING** . . . One man moves tower to vertical position in a few minutes (on cradle-mounted models) . . . in average ground, drills better than a foot a minute.
- **COMPACT SELF-POWERED UNIT** . . . Heavy-duty gasoline engine, complete unit easily mounted or removed from truck.
- **CONTROLLED DRILLING** . . . Operator completely controls feed into ground. 4 speed and reverse transmission provides flexible power, any desired speed.
- **CLEAN HOLES** . . . Compacts the hole wall, fewer cave-ins.

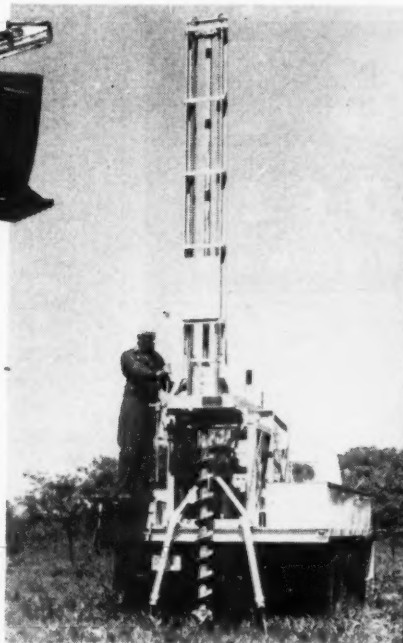
See your nearest Distributor for complete details.



• Above: Cradle-mounted Earth Drill Model HBE, shown in traveling position, complete with 45 h.p. gasoline engine.

• Right: Model HBH Deep Hole Earth Drill. Ideal for soil testing, prospecting. Tower lowers into traveling position for highway traveling.

• Extreme right: Model HBE Earth Drill with pole setting derrick in place for power pole work.

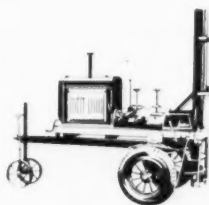


Write for literature

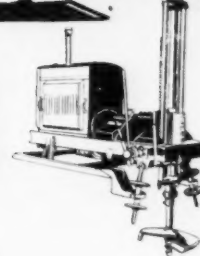
BUDA

15430 Commercial Avenue
HARVEY (Chicago Suburb) ILLINOIS

Buda Model HBB
Trailer - Mounted
Earth Drill. Can
be towed by
truck or tractor.



Buda Model HBD
Earth Drill. Rigid
head. Designed
and built for a
wide range of
construction work.





How Big Is Two Inches?

Silly question? Not at all, that is, when you're speaking of pump sizes . . . and capacities!

For the size of a contractor's pump alone does not guarantee capacity or performance . . . unless the pump bears an AGC rating plate. That plate is your guarantee that a 2-inch pump will deliver the capacity set up by the AGC Contractors Pump standards for that particular pump. It is your assurance that when you buy size, you get the capacity you want!

To eliminate the guesswork in buying pumps, choose one bearing the AGC rating plate. Be sure of capacity and performance in advance!



CONTRACTORS PUMP BUREAU		
BARNES MANUFACTURING CO. Mansfield, Ohio	CONSTRUCTION MACHINERY CO. Waterloo, Iowa	STERLING MACHINERY CORP. Kansas City, Mo.
CHAIN BELT COMPANY Milwaukee, Wis.	MARLOW PUMPS Ridgewood, N. Y.	CARVER PUMP CO. Muscatine, Iowa
JAEGER MACHINE CO. Columbus, Ohio	Affiliated with	THE GORMAN-RUPP CO. Mansfield, Ohio
G. H. & E. MANUFACTURING CO. Milwaukee, Wis.	THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC.	NOVO ENGINE CO. Lansing, Mich.

ETNYRE "Black-Topper"

BITUMINOUS DISTRIBUTORS



ACCURATE AND DEPENDABLE—In new road construction or in making those much needed road repairs you'll find an Etnyre "Black-Topper" accurate in distribution, dependable in performance, low-cost in operation. Save time, maintenance and labor costs. See your Etnyre dealer or write us today for complete details.

E. D. ETNYRE & CO., Oregon, Illinois

(Continued from page 166)

so grading procedure is constantly changing.

Joseph Sayward is chairman of the Main Turnpike Authority, with W. B. Getchell, Jr. as executive director. Lucius D. Barrows, state highway engineer, is also secretary-treasurer of the Authority. E. R. Needles, resident New York partner, is in general charge of field operations for the consulting engineers, with L. C. Hammond as project engineer and L. D. Brown as executive field engineer. Plans and specifications for the project are prepared in the Kansas City office of the engineers, with R. N. Bergendorff, partner in charge. E. D. Moore is general superintendent for Lane Construction Corp. and L. F. McCarthy is in charge for Savin Construction Corp.

GOOD HAUL ROADS

(Continued from page 93)

It should be noted in the example given that the maintenance of a good haul road permitted the job to be completed with less equipment and in a shorter time, as well as at considerable savings in cost. It is also apparent that these savings in equipment outlay and operating costs increase rapidly, as do the production figures, when haul distances are lengthened.

With the critical shortage of earthmoving equipment that exists today, and with present projects demanding moving more material a greater distance, it is essential that each available unit be operated in such a manner that it produces at maximum capacity, in order that numerous and vital projects now under way may be speedily completed.

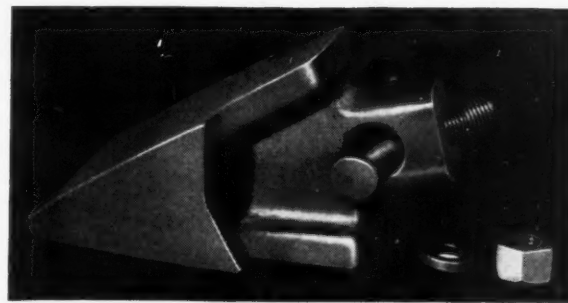
Careful job planning makes certain that haul road grades are favorable toward the fill, and are kept at a practical minimum. It also calls for sprinkling of dusty roads and, on large projects, may even justify the construction of an all weather road. These precautions permit the highest average speeds to be regularly attained, and realize to the fullest extent the potentialities of the high-speed rubber-tired scraper unit. Whatever arrangement can be best used on your job, remember good haul roads make good sense.

Another first...



for
PAGE
Automatic
DRAGLINE BUCKETS

New
and exclusive...



**PAGE REVERSIBLE
CENTER SHANK
TOOTH POINTS**
(secured by a hook bolt)

Page Manganese reversible Tooth Points will stay absolutely *tight* on the lip. The new hook bolt fastening prevents wearing and tearing of the bolt and also allows quick and easy detachment of the Tooth Points. Page *Automatic* Buckets are now equipped with these new Tooth Points to insure the best digging in any type of material—a great advancement for the *Automatic*—a great saving for you!



PAGE **ENGINEERING COMPANY**
CHICAGO 38, ILLINOIS

"IF THAT TOP KICK COULD JUST SEE ME NOW!"



VETERANS! WHY NOT RUN YOUR OWN BUSINESS?

You can cash in on what you learned in the army about welding. Thousands of 200, 300 and 400 Ampere AC and DC Arc Welding units are surplus and available to you on veteran priority. There are large quantities of Hobarts and Lincolns, quite a few Westinghouse and fair amounts of other makes for sale now. Most of the equipment is used and in good operating condition. Best of all, it is being sold at prices you can afford in setting up your own repair shops or for contract work. Write, wire or phone the nearest War Assets Administration Regional Office below or come in and ask for the special veterans' service section.

FREE INFORMATION

For full information clip and mail this coupon to War Assets Administration:

Please send me complete information on the availability, condition and location of the following types of equipment:

- ☐ Hobart Arc Welders
- ☐ Lincoln Arc Welders

- ☐ Westinghouse Arc Welders
- ☐ Electrodes and Welding Rods

Arc Welding Equipment:

Electric Motor Driven:

Transformer Type:

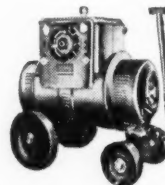
AC.....DC.....
Volts.....Phase.....Cycles.....
Volts.....Phase.....Cycles.....

Name.....

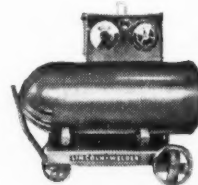
Firm.....

Address.....

City.....State.....



Hobart—Standard models of this make available in large quantities and most ratings.



Lincoln—In all models and most ratings. Hundreds in the popular 300-400 Ampere size.

EXPORTERS: Most surplus property is available to the export market. Merchandise in short supply is withheld from export, and if such items appear in this advertisement they will be so identified by an asterisk.

All arc welders are subject to priority regulations. **VETERANS OF WORLD WAR II** are invited to be certified at the War Assets Administration Certifying Office serving their area, and then to purchase the material offered herein.

WAR ASSETS ADMINISTRATION

**GOVERNMENT
OWNED
SURPLUS**

Offices located at: Atlanta • Birmingham
Boston • Charlotte • Chicago • Cincinnati
Cleveland • Dallas • Denver • Detroit • Fort
Worth • Helena • Houston • Jacksonville
Kansas City, Mo. • Little Rock • Los Angeles

Louisville • Minneapolis • Nashville • New
Orleans • New York • Oklahoma City
Omaha • Philadelphia • Portland, Ore.
Richmond • St. Louis • Salt Lake City • San
Antonio • San Francisco • Seattle • Spokane

Surplus Electrical Fittings

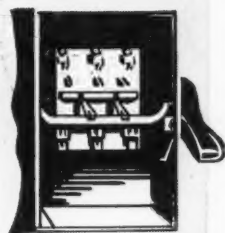
WEATHER RESISTANT CONDULETS

For electrical installations exposed to weather, moisture, steam or combustible dust.



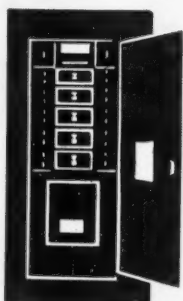
SAFETY SWITCHES

Single and Multiple switches. All ratings and types.



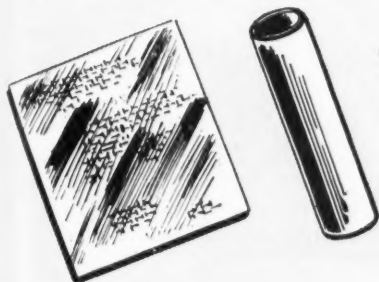
PANEL BOARDS

For lighting and appliance circuits. All electrical services and voltages.



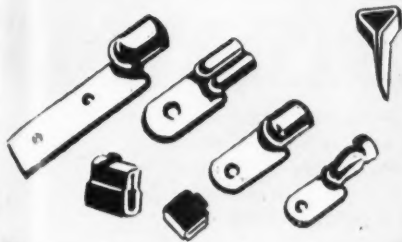
PLASTIC INSULATING SHEETS

Laminated plastic sheets and tubes for electrical uses.



CONNECTORS

Both solder and solderless types.



ALL TYPES FOR IMMEDIATE SALE

at

LOW COST

Electrical fittings of every description are now available to industry, electrical contractors, wholesalers and dealers. Hundreds of items of standard and special equipment are included in this surplus inventory — in many instances the special items are readily adaptable to other uses or needs.

All fittings and equipment are being sold at bargain prices representing a very real saving to purchaser. Prompt delivery is assured.

A partial list of available electrical fittings and equipment is given here:

Condulets
Switches
Panelboards
Connectors
Special Electrical Motors
Wiring Devices

Power Conversion Equipment
Sub-station Equipment
Protective Equipment
Pole-line Hardware
Plastic Insulating Sheets
Hundreds of Other Items

Send this coupon to your nearest WAA Regional Office:

I AM INTERESTED IN THE FOLLOWING:

ITEMS

DESCRIPTION

.....
.....
.....
.....

Name

Firm

Address

City State

All Electrical Fittings and Equipment are subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

EXPORTERS:

Most surplus property is available to the export market. Merchandise in short supply is withheld from export, and if such items appear in this advertisement they will be so identified by an asterisk.

WAR ASSETS ADMINISTRATION

GOVERNMENT
OWNED
SURPLUS

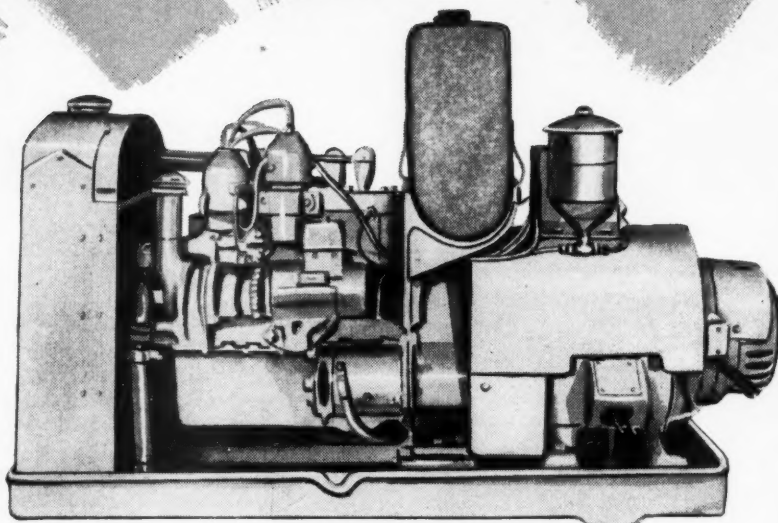
Offices located at: Atlanta • Birmingham
Boston • Charlotte • Chicago • Cincinnati
Cleveland • Dallas • Denver • Detroit • Fort
Worth • Helena • Houston • Jacksonville
Kansas City, Mo. • Little Rock • Los Angeles

Louisville • Minneapolis • Nashville • New
Orleans • New York • Oklahoma City
Omaha • Philadelphia • Portland, Ore.
Richmond • St. Louis • Salt Lake City • San
Antonio • San Francisco • Seattle • Spokane

691-2

PACKAGED POWER

**PORTABLE DIESEL and
GASOLINE ENGINE DRIVEN**



GENERATOR SETS

Many Generator Sets, produced by well known manufacturers are now available from government-owned surplus. The majority of them are new, unused sets. Used sets in good condition are also available at reduced prices. The following types provide a rugged, dependable, economical source of electric power for:

Stand-by Units	Summer Camps
Small Machine Shops	Trailer Camps
Saw Mills	Carnivals and Fairs
Radio Stations	Mobile Power Units
Rural and Farm Installations	

ALTERNATING CURRENT: 50 and 60 cycles; single and three phase; 120-480 volts; $1\frac{1}{2}$ kva. and up; priced from \$250 up.

DIRECT CURRENT: 24, 110 and 220 volts; $\frac{1}{4}$ to 40 KW; priced from \$80 up.

The units are compact—versatile—built to endure. They are immediately available to your nearest War Assets Administration Regional Office. Write, wire or phone today.

All Portable Generator Sets are subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the equipment offered herein.

EXPORTERS:

The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

All items are subject to prior sale.

HOW TO PURCHASE:

1. If you can claim a priority, obtain your priority certificates at the nearest W.A.A. Certifying Office. Contact the W.A.A. office below for Certifying Office address and make application to purchase.

2. If you do not have priority status simply call any W.A.A. Office below; state the approximate KW rating you desire and the type of machine. You will be told where the machines you wish may be seen and how to complete purchase.

3. If the equipment you wish is not available in your local W.A.A. Regional Office—ask to have national inventories checked by the W.A.A. Inter-Regional Division of your local office and wait for notification of availability.

WAR ASSETS ADMINISTRATION

**GOVERNMENT
OWNED
SURPLUS**

Offices located at: Atlanta • Birmingham
Boston • Charlotte • Chicago • Cincinnati
Cleveland • Dallas • Denver • Detroit • Fort
Worth • Helena • Houston • Jacksonville
Kansas City, Mo. • Little Rock • Los Angeles

Louisville • Minneapolis • Nashville • New
Orleans • New York • Oklahoma City
Omaha • Philadelphia • Portland, Ore.
Richmond • St. Louis • Salt Lake City • San
Antonio • San Francisco • Seattle • Spokane



**PROVIDE
MOBILE PROTECTION
AGAINST
DISASTER-BRED
DISEASE**

Mobile water purification units are your community's insurance against disease from water impurities in times of emergency. They bring vital water to stricken areas. They go where they are needed—when they are needed.

Make sure today that your community has this protection!

VITAL TO: City Health Departments—State Health Departments—Red Cross—Disaster Control Commissions.

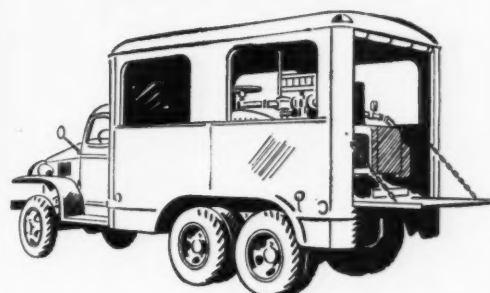
ALSO OF VALUE TO:

Veterans' Administration—Departments of Agriculture—State Forestry Departments—Boy Scouts—Girl Scouts—Sea Scouts—Expeditions—Construction Camps—Lumber Camps.

All water purification equipment is subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase material offered herein.

Most surplus property is available to the export market. Merchandise in short supply is withheld from export, and if such items appear in this advertisement they will be so identified by an asterisk.

**WATER PURIFICATION UNITS AT
HALF COST!**



Truck mounted water purifier, showing installation of purifying equipment.

These self-contained water purification units are mounted on trucks or trailers, ready for immediate use. They do not require specially trained operating personnel, they are cleaned easily and with little loss of operating time.

Capacity 1,200 to 6,000 gallons per day.

Some of the available types:

Water Purification Unit—Wallace & Tiernan make, gasoline engine driven, 2" pump, mounted on 2½ ton GMC 6 x 6 truck. Capacity—75 G.P.M.

Distillation Unit—vapor compression type, gasoline engine driven, mounted on trailer. Capacity—1500 gals. per day.

Water Purification Unit—Wallace & Tiernan make, gasoline engine driven, mounted on 2½ ton GMC 6 x 6 truck. Capacity—100 G.P.M.

Distillation Unit—Cleaver-Brooks make, gasoline power, 2" pump, mounted on trailer. Capacity—2,000 gals. per day.

Also some units for the distillation of salt water, mounted on skids and available as separate units.

WAR ASSETS ADMINISTRATION

Offices located at: Atlanta • Birmingham
Boston • Charlotte • Chicago • Cincinnati
Cleveland • Dallas • Denver • Detroit • Fort
Worth • Helena • Houston • Jacksonville
Kansas City, Mo. • Little Rock • Los Angeles

**GOVERNMENT
OWNED
SURPLUS**

Louisville • Minneapolis • Nashville • New
Orleans • New York • Oklahoma City
Omaha • Philadelphia • Portland, Ore.
Richmond • St. Louis • Salt Lake City • San
Antonio • San Francisco • Seattle • Spokane

652-2

SURPLUS unused

Tubing

FOR IMMEDIATE SALE

Standard and Non-Standard O. D.'s and Wall Thicknesses
Range of Sizes from 1/4" to 7"



Types:

Carbon, Alloy, and Some Stainless;
Both Welded and Seamless.

Price:

ALL TO BE SOLD ON FIXED PRICE BASIS,
F.O.B. LOCATION.

Delivery:

Subject to Arrangement at Time of Sale Between
Buyer and Regional Office Having the Stock.

**Where
to
buy:**

Write, Wire or Phone Your Nearest War Assets
Regional Office Below, indicating the type, size and
specifications in which you are interested.

Orders received by 5 P. M. November 4, 1946 will be filled in the following sequence, as provided by law: (1) Certified veterans of World War II; (2) Subsequent priority claimants in proper sequence; (3) Non-priority purchasers. Veterans of World War II should apply to their nearest War Assets administration certifying office for certification; The case number shown on certification and the location of the certifying office must be stated in a veteran's offer to purchase.

WAR ASSETS ADMINISTRATION

**GOVERNMENT
OWNED
SURPLUS**

Offices located at: Atlanta • Birmingham
Boston • Charlotte • Chicago • Cincinnati
Cleveland • Dallas • Denver • Detroit • Fort
Worth • Helena • Houston • Jacksonville
Kansas City, Mo. • Little Rock • Los Angeles

Louisville • Minneapolis • Nashville • New
Orleans • New York • Oklahoma City
Omaha • Philadelphia • Portland, Ore.
Richmond • St. Louis • Salt Lake City • San
Antonio • San Francisco • Seattle • Spokane

Advertisers in this issue

Adams Manufacturing Co., J. D.	113
Alemite Div., Stewart-Warner Co.	119
Allis-Chalmers Mfg. Co.	14, 15
American Hoist & Derrick Co.	58
American Manganese Steel Div., American Brake Shoe Co.	134
American Steel & Wire Co.	41
Armco Drainage & Metal Pds., Co., Inc.	47
Armstrong Bros. Tool Co.	162
Assoc. Gen. Contrs. of America, Inc., The	68
Athey Products Corp.	32
Atlas Powder Co.	62
Atlas Steel Construction Co.	6
Austin-Western Co.	69

Baker Manufacturing Co.	35
Barber-Greene Company	46
Barnes Mfg. Co.	160
Bay City Shovels, Inc.	65
Bethlehem Steel Company	38, 70
Blaw-Knox Div., Blaw-Knox Co.	118
Briggs & Stratton Corp.	140
Buckeye Traction Ditcher Co.	161
Bucyrus-Erie Co.	72
Buda Company	167
Butler Engrg. & Mfg. Co.	126

Carlyle Rubber Co.	150
Caterpillar Tractor Co.	30, 31
Chain Belt Co.	56
C. I. T. Corp.	24
Coffing Hoist Co.	166
Columbia Steel Co.	41
Complete Machy. & Equip. Co., Inc.	176
Consolidated Steel Corp.	176
Construction Machinery Co.	126
Contractors Pump Bureau	168
Cummins Engine Co., Inc.	129

Diamond Chain Co., Inc.	71
Dixon Valve & Coupling Co.	133
duPont de Nemours & Co., Inc., E. I. (Fabrics Div.)	138

Electric Tamper & Equipment Co.	175
Electroline Co.	152
Etnyre & Co., E. D.	168
Euclid Road Machinery Co., The	7

Finn Equipment Co., The	176
Ford Motor Company (Industrial Marine Div.)	40
(Truck Div.)	28

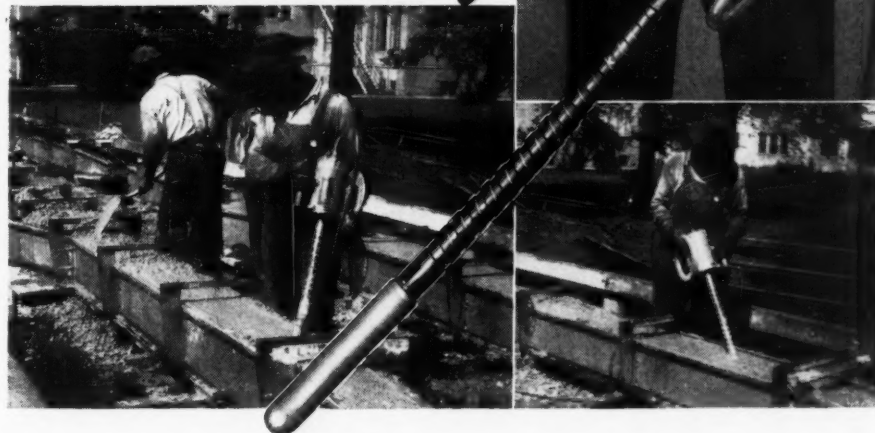
Galion Iron Works & Mfg. Co., The	117
Gar Wood Industries, Inc.	13, 125
General Electric Co.	135
General Excavator Co.	123
General Motors (Detroit Diesel Engine Div.)	67
General Tire & Rubber Co., The	45
Goodall Rubber Co.	157
Goodrich Co., B. F.	9
Goodyear Tire & Rubber Co., The	74
Gorman-Rupp Co., The	54
Griffin Wellpoint Corp.	134
Gulf Refining Co.	50

Haiss Mfg. Co., Inc., Geo.	176
Haynes Products Co.	176
Hazard Wire Rope Div., American Chain & Cable Co., Inc.	3rd Cover
Heil Company, The	127
Hetherington & Berner, Inc.	160
Highway Equipment Co., Inc.	136
Homelite Corp.	63
Huber Mfg. Co., The	137

Independent Pneumatic Tool Co.	52
Industrial Brownhoist Corp.	164
Inland Steel Company	2nd Cover
International Harvester Co.	48, 49
Iowa Manufacturing Co.	155
Irvington Form & Tank Corp.	6

(Continued on page 176)

THE **NEW** **JACKSON** **FS-7A** EXACTLY THE **VIBRATOR** YOU'VE LONG *wanted!*



★ LIGHTER FOR EASIER HANDLING

The JACKSON FS-7A Flexible Shaft Concrete Vibrator is built around an amazing new type motor that weighs just 28 lbs., yet develops far more power per pound of weight than any other motor we have previously used in equipment of this type. Operates on AC or DC, 115 Volt power and may be plugged into light socket or power plant.

★ IDEAL FOR THOSE HARD-TO-GET-AT PLACES —

thin walls, heavily reinforced sections and around structural steel. And in addition it is

★ HUSKY ENOUGH TO HANDLE THE LARGER HEADS AND LONGER SHAFTS

The FS-7A will handle any of our standard heads up to 2 3/8" x 18 1/2", and may be equipped with flexible shafting of 24", 36", 7', or 14 ft. lengths. Motor produces 7,000 to 10,000 V.P.M. depending on the length of shaft, size of head and consistency of concrete.

★ A GENERAL PURPOSE VIBRATOR

that steps up production and saves the cost of extra equipment by its wide range of application. See your JACKSON distributor or write for further details.

ELECTRIC TAMPER & EQUIPMENT CO.
LUDINGTON MICHIGAN

WHERE TO BUY

Featuring additional Products, Specialties and Services for the Construction Industry

COMPLETE WELL POINT SYSTEMS WILL DRY UP ANY EXCAVATION

Faster—More Economically
Write For Job Estimate and 32 page Catalog

COMPLETE
MACHINERY & EQUIPMENT CO., Inc.
36-36 11th St., Long Island City, N. Y.
Tel. TRenside 6-9600
Branch: Third Avenue & Adams St., Gary, Indiana
Telephone: Gary 23983

Waterproof with Formula No. 640

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

HAYNES PRODUCTS CO., OMAHA 3, NEBR.

GEORGE HAYSS MFG. CO., INC.
139th ST. & CANAL PL., NEW YORK 31, N.Y.

HAYSS CLAMSHELL
BUCKETS

STERLING HOISTS

SIMPLE
DEPENDABLE
RUGGED
•
WRITE FOR
LITERATURE

STERLING MACHINERY CORPORATION
405 Southwest Blvd., Kansas City, Mo.

METAL-WINDOWS (STEEL-ALUMINUM-BRONZE)

LARGE STOCK—ALL TYPES
STEEL SASH SALES & SERVICE
Weehawken New Jersey

This WHERE TO BUY Section

supplements other advertising in this issue with these additional announcements of products and services essential to efficient and economical operation in the construction industry.

SEARCHLIGHT SECTION

CONSOLIDATED STEEL CORPORATION LOS ANGELES

NEEDS
DRAFTSMEN—DETAILERS
DRAFTSMAN—CHECKERS
EXPERIENCED IN
STRUCTURAL STEEL
FABRICATION OF
BUILDINGS, BRIDGES, ETC.
AND IN PLATE STEEL
FABRICATION OF PRESSURE
BOILERS AND TANKS, ETC.

TOP PAY PERMANENT

WRITE
**CONSOLIDATED
STEEL CORPORATION**

Personnel Department
P. O. BOX 6880
EAST LOS ANGELES BRANCH
LOS ANGELES 22, CALIFORNIA

"BUILDING CONSTRUCTION COST DATA"

A 72-page booklet of tabulated construction costs, 1150 items broken down for labor and material. Arranged alphabetically and under cut A to Z. Concise, Comprehensive and Up-to-date. \$1.60 Postpaid.

R. S. MEANS
Box 62M Duxbury, Mass.

FOR SALE CLIMAX GASOLINE ENGINES

NEW—model V-425, 12 cylinder 425 H.P. at 1200 RPM, gasoline engine power unit complete radiator to twin disc clutch inclusive with gasoline starting engine. Cheaply convertible to natural gas operation. Priced far below factory list, 7 units available. Dealers invited.

THE FINN EQUIPMENT CO.
2525 Duck Creek Road
Cincinnati 8, Ohio
Phone East 1125

SEVERAL HUNDRED IRON AND STEEL SHEAVES and castings of varied types. Steel pinions and gears, 4 sets. 9-10 groove steel drums, 1/2" rope. 14-25 3/4" steel sheaves, 7/8" rope. 6 pcs. 118' ea. 7/8" 6 x 37 improved plow steel cable.

UTILITY ELEVATOR SERVICE, INC.
34 JUMEL PLACE NEW YORK 32, N. Y.

WANTED ONE SHOVEL

10 to 30 yd.
W-166, CONSTRUCTION METHODS
520 N. Michigan Ave., Chicago 11, Ill.

Advertisers Index

(Continued from page 175)

Jaeger Machine Co., The.....53, 158
Johns-Manville.....42, 163
Johnson Co., The C. S.....60
Jones & Laughlin Steel Corp.....109
Joy Mfg. Co. (Sullivan Div.).....64

Koehring Company, The.....60, 61
Kotal Company.....44

LaPlant-Choate Mfg. Co., The.....57
Laughlin Co., The Thomas.....120
Lehigh Portland Cement Co.....59
Le Roi Company.....Insert, bet. pgs. 64, 65
Leschen & Sons Rope Co., A.....8
LeTourneau, Inc., R. G.....22, 23
Levinson Steel Co., The.....20
Lima Locomotive Works, Inc.....51
Lincoln Electric Co.....26, 27
Link-Belt Speeder Corp.....145
Littleford Bros., Inc.....159
Lone Star Cement Corp.....5
Louisville Cement Co., Inc.....12
Lufkin Rule Co., The.....146

Macwhyte Co.....34
Mall Tool Co.....150
Marlow Pumps.....153
Marmon-Herrington Co., Inc.....25
McGraw-Hill Book Co., Inc.....158, 166
McKiernan-Terry Corp.....142
Means, R. S.....176
Mercer-Robinson Co., Inc.....154
Michigan Power Shovel Co.....151
Mixer Manufacturers' Bureau.....130
Moretrench Corp.....73

National Lead Company.....141
Nelson Corp., The Herman.....163
Northwest Engineering Co.....11

Oakite Products, Inc.....162
Oliver Corp., The.....2, 3
Osgood Co., The.....123
Owen Bucket Co., The.....146

Page Engineering Co.....169
Parsons Co., The.....60
Perfection Steel Body Co., The.....122
Pettibone Mulliken Corp.....39
Piper Mfg. Co., R. J.....162
Porto-Pump, Inc.....166

R. P. B. Corporation.....122
Rodgers Hydraulic, Inc.....139
Roebing's Sons Co., John A.....55
Rogers Brothers Corp.....156

Searchlight Section.....176
Schramm, Inc.....33
Shell Oil Company.....121
Shunk Mfg. Co.....158
Sinclair Refining Co.....147
Snap-on Tools Corp.....21
Socony-Vacuum Oil Co., Inc.....36, 37
Southwest Welding & Mfg. Co.....132
Standard Oil Co. (Indiana).....66
Steel Sash Sales & Service.....176
Sterling Machinery Corp.....176
Sterling Wheelbarrow Co.....144
Syntron Company.....148

Templeton, Kenly & Co.....148
Texas Company, The.....16, 17
Thermoid Company.....10
Thew Shovel Co., The.....29
Timken-Detroit Axle Co., The.....149
Timken Roller Bearing Co., The.....4th Cover

Union Fork & Hoe Co., The.....164
Union Metal Mfg. Co., The.....43
Union Wire Rope Corp.....18, 19
Unit Crane & Shovel Corp.....116
United States Steel Corp., Subsidiaries.....41, 111
Universal Atlas Cement Co.....111
Utility Elevator Service, Inc.....176

Viber Company, The.....144
Vickers, Inc.....115
Vulcan Iron Works.....152

War Assets Admn.....170, 171, 172, 173, 174
Warner Brothers Co., The (Spiratube Div.).....124
Wellman Engineering Co., The.....154
White Mfg. Co.....138
Whiteman Mfg. Co.....156
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp.....128
Worthington Pump & Machy. Co.....142, 143

HAZARD ACCO-LOC Safety Splice

... flexible to the end

Exclusive FEATURES:

- 1 ACCO-LOC Safety Splice is easy and safe to handle. No seizing wires to loosen; no wire ends to barb.
- 2 This method of splicing does not distort rope structure. Maintains equalized stresses in all strands.
- 3 ACCO-LOC Safety Splice is extremely flexible—clear to the terminal, thus permitting close snubbing.
- 4 Easy to inspect at all times.
- 5 ACCO-LOC Safety Splice assemblies are made of LAY-SET Preformed wire rope—the safe, kink-resisting, easy-to-handle rope.



Here is a safer, more reliable wire rope ending. It has no awkward, bulky hand-tuck splicing. Instead, a neat, compact, flexible terminal that *always* develops 100% of the rope strength. May be used with any standard fitting. ACCO-LOC Safety Splice assemblies now available in stock sizes. Send today for literature.

ACCO

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.



**HAZARD WIRE ROPE DIVISION
AMERICAN CHAIN & CABLE**

In Business for Your Safety

Contractors say

**ROCK DRILLING
COSTS ARE LESS WITH
Timken Bits**



Any contractor who has had any appreciable experience with Timken Rock Bits will tell you that his rock moving costs are considerably lower than they used to be.

That's because Timken Bits drill faster; yield more footage per bit; can usually be reconditioned several times for additional service life; drastically cut steel costs; save the drillers' time.

These advantages spring from a combination of design, material and manufacturing technique that cannot be duplicated. No other bit manufacturer makes his own steel. No other bit manufacturer has the benefit of such far-reaching metallurgical knowledge and experience.

If you've never used Timken Bits you don't know what you're losing. Write for name of nearest authorized distributor. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN

TRADE MARK REG. U. S. PAT. OFF.

ROCK BITS